NK1 D462

Council of Industrial Design

October 1957 No 106 Price 3s

Design

A.U. LIBRARY

15 1957

PERIODICALS

Opportunity by the sq ft

If you are at that operative point, in a small job or a large one, where the colour and variety and solidity and cool, clean texture of FORMICA decorative laminates might bring the whole thing to life in a new way . . . If you're just *there*, then take your opportunity!

For FORMICA laminated plastic is one of those fundamental materials that upset earlier concepts by the score– and its full possibilities are nowhere near realised yet. Its sheer practical beauty gave it a start in the kitchen. Its sheer practical beauty is taking it far and wide, into industrial and public life. And once you say . . .

FORMICA* for me!

. . . who knows where it may go? Things are moving fast at our end–new colours, new patterns, new forming techniques, new experience with furniture and panelling. But the future lies with you. Will you get in touch with us?

Write for further information to Formica Ltd., Dept. F478, De La Rue House, Regent Street, London, W1

*FORMICA *is a registered trademark*

Look for the name FORMICA on every sheet

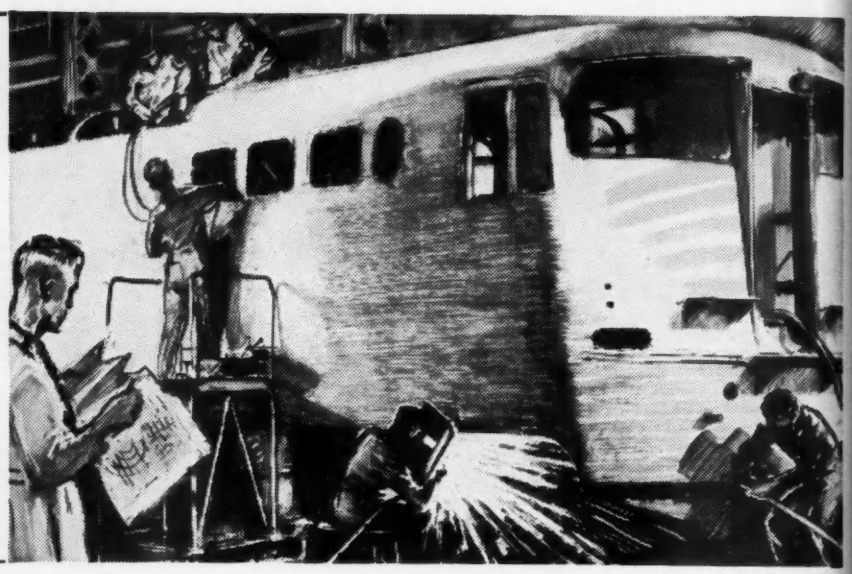
awards and rewards at Mathers

Should you be a designer at Mather and Crowther ? Could you be ? This depends, not entirely on experience, but also upon your point of view. Mather's advertising is good looking. (It won the highest Layton awards this year.) It is planned to sell. (You could have a share in the planning.) It sells causes as well as goods. (A national responsibility.)
Are you this sort of designer ?

Write to STANHOPE SHELTON, Creative Director, Mather and Crowther Ltd., Brettenham House, Lancaster Place, London, WC2

'ENGLISH ELECTRIC'

The first main-line locomotive for Britain's 15-year plan to modernize the railways was recently delivered by ENGLISH ELECTRIC. Under this plan steam will be progressively replaced by electric and diesel-electric power. ENGLISH ELECTRIC is building many of these new locomotives. But this is only half the story. Electrifying hundreds of miles of main and suburban lines is an enormous task, and ENGLISH ELECTRIC will share in producing the many kinds of equipment needed.



bringing you

In India, in Brazil, Spain, New Zealand and many other countries, ENGLISH ELECTRIC has long experience of the problems of electric railway traction, and ENGLISH ELECTRIC locomotives have proved their efficiency and dependability under the most gruelling conditions. ENGLISH ELECTRIC is equipped to build *complete* electric and diesel-electric locomotives; its exports of these and of other railway equipment are a valuable source of foreign exchange for Britain.

better living

The ENGLISH ELECTRIC Company Limited, Marconi House, Strand, London, W.C.2

TIBOR

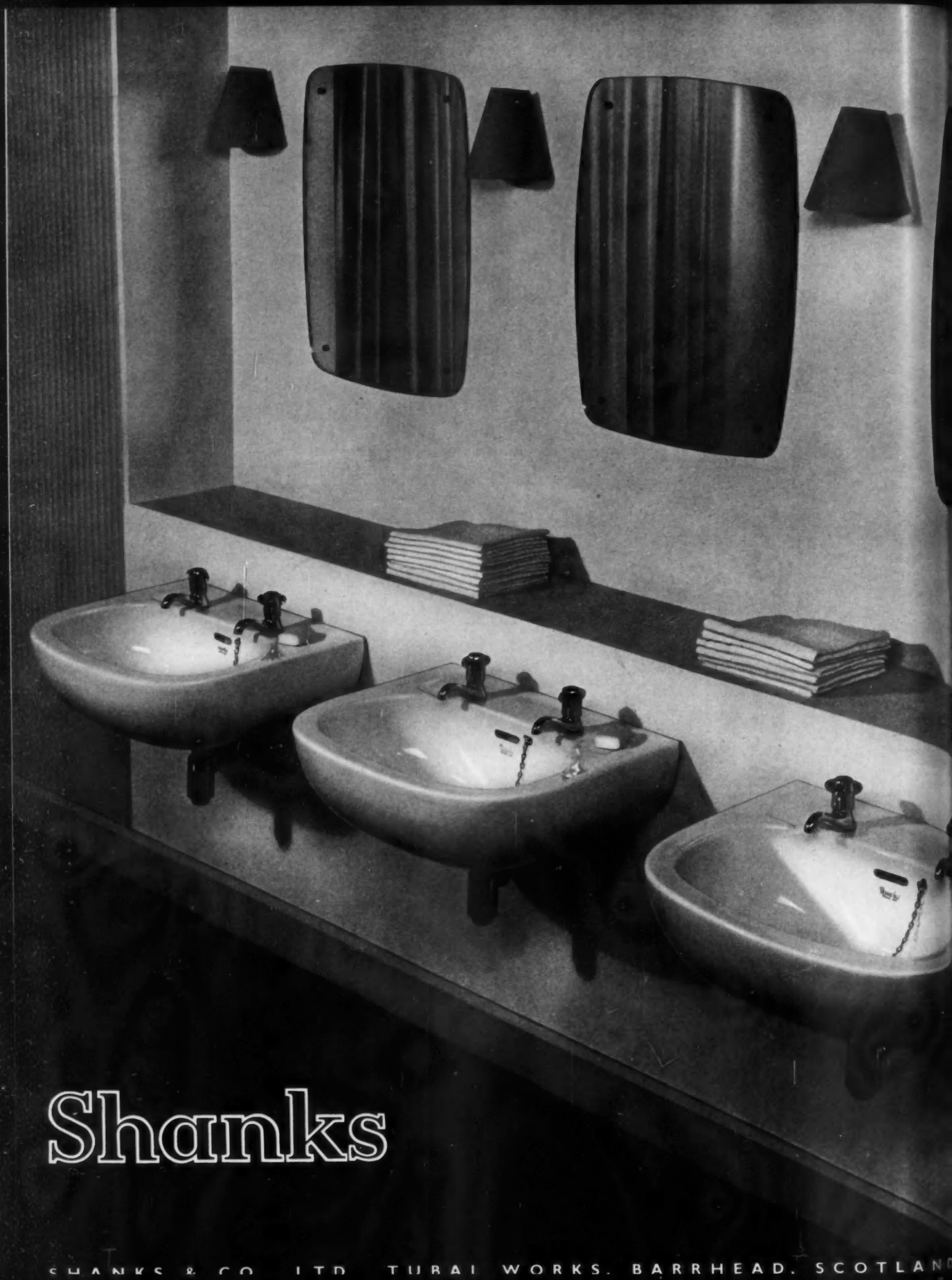
"Sunburst"—one of Tibor's latest Textureprint range of screen printed designs on satin-faced cotton. Other designs like "Niza", "Palermo" and "Gondola" are available in exciting colourways to blend with Stockwell carpets and Tibor deep texture upholstery fabrics. Produced by: Tibor Ltd., Stratford-on-Avon.

VESPER

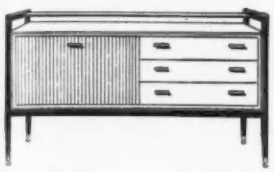
This elegant Easy chair model 424 designed by N. K. Hislop has Sycamore finish legs, latex foam cushion and is upholstered in Tibor's latest "Seville" deep texture fabric, which is available in 10 new shades. Produced by: Gimson & Slater Ltd., Walton Street, Long Eaton.

stockwell

Carpet: Equerry (regd.) wilton filling in design "Caserta" created by Tibor Reich, F.S.I.A. Stock-colouring. Black Persimmon. All-woollen Pile. Guaranteed mothproof for life. Produced by: S. J. Stockwell & Co. (Carpets) Ltd., 16 Grafton Street, London, W.1.



SHANKS & CO. LTD. TUBAL WORKS. BARRHEAD. SCOTLAND



F. WRIGHTON & SONS LIMITED · BILLET ROAD · WALTHAMSTOW · LONDON · E.17

for a beautiful home

WRIGHTON *unit furniture*

THIS CHARMING DRESSING TABLE (3' 10") IN WALNUT FINISH . £36 . 18 . 7

SMALL-OFFICE BOOK-KEEPING MACHINES

Low-cost multi-purpose models designed to meet the accounting requirements of smaller offices and "sub" departments.

Beautiful machines, beautifully made by National Reg: T.M.

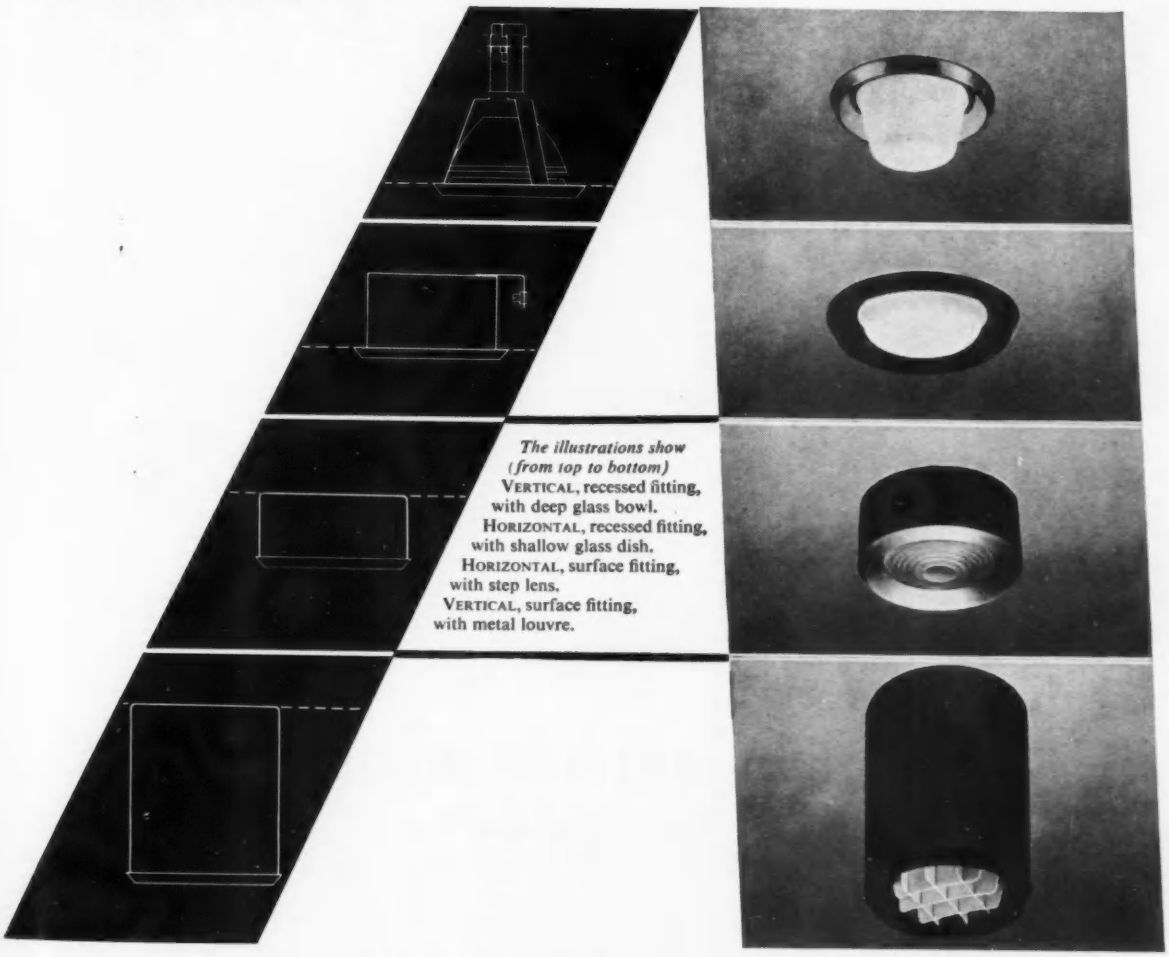
Adding & Accounting Machine Division of The National Cash Register Company Ltd., 206-216 Marylebone Road, London, N.W.1. *Telephone: PADdington 7070*

New display lighting range with

A FLAIR FOR FLEXIBILITY

ATLAS DISPLAY LIGHTING FITTINGS

Success in display lighting demands, above all things, flexible control of the lighting. Although flexibility is the predominant feature of these new Atlas display lighting fittings, elegance and quality are also very evident. By taking four well designed basic fittings to which can be added some equally good accessories, a wide range of lighting units can be assembled. Fittings are available for flush or surface mounting to take lamps from 60 – 300w. Accessories include a neat lock-in soffit ring in various finishes, deep or shallow dishes of beautiful satin etched glass, a new white metal louvre, a clear stepped lens, plus the full Cinnabex range of colour filters. The range is further augmented by a number of special units to provide points of sparkle and interest. Full details gladly supplied on application.



The illustrations show (from top to bottom)
VERTICAL, recessed fitting, with deep glass bowl.
HORIZONTAL, recessed fitting, with shallow glass dish.
HORIZONTAL, surface fitting, with step lens.
VERTICAL, surface fitting, with metal louvre.

ATLAS LIGHTING LIMITED *A subsidiary company of Thorn Electrical Industries Ltd* 233 SHAFTESBURY AVENUE LONDON WC2

Geon
Polyvinyl Materials

design surprises

There's a magical touch about Geon.
Sometimes it feels like leather, sometimes like fabric;
in one application rigid, in another flexible;
here coloured, there plain.
Versatile Geon. Wherever you go—hotels, factories,
kitchens, shoeshops, the Design Centre,
see what modern designers are doing with Geon.
See how they shape this tough, economical, easily fabricated
material into products of today which last for years.
Consider the virtually limitless possibilities for Geon,
as coated fabric or PVC sheeting, PVC foam
or rigid PVC. Then specify it in your own applications.
For full information about Geon PVC write for Booklet No. 9

See Geon at its best in

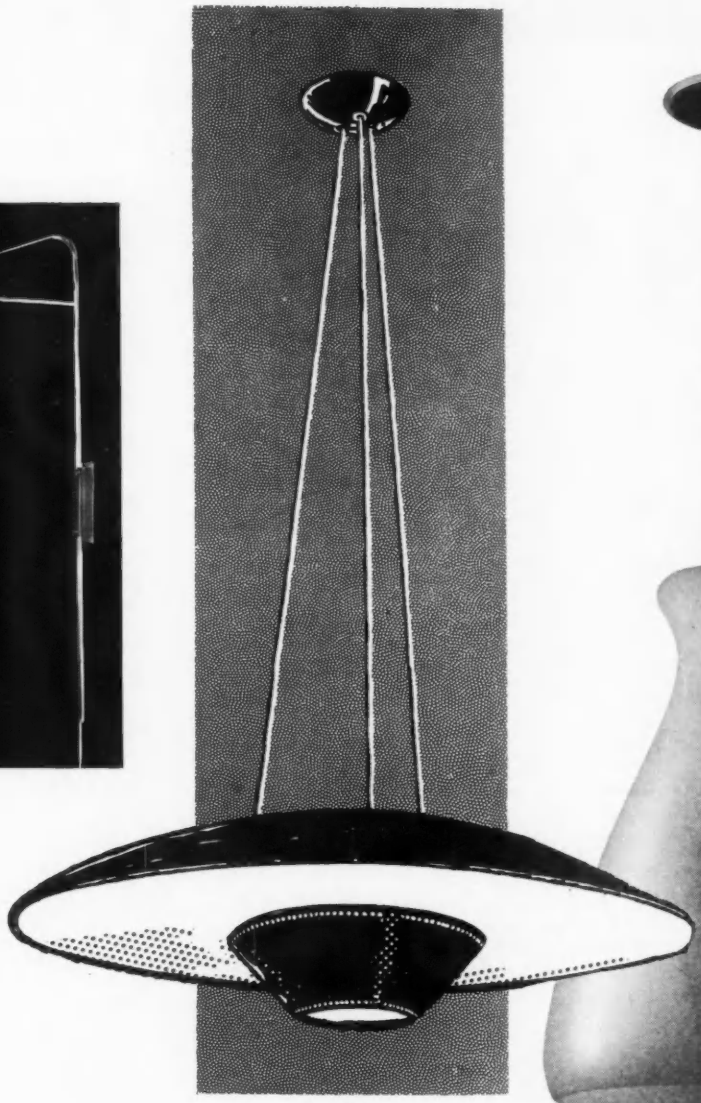
floorcovering
upholstery
wallcovering
curtaining
rainwear
shoe linings
galoshes
toys
gramophone records
handbags
suitcases

Geon *Polyvinyl Materials* *'Geon' is a reg'd trade mark*

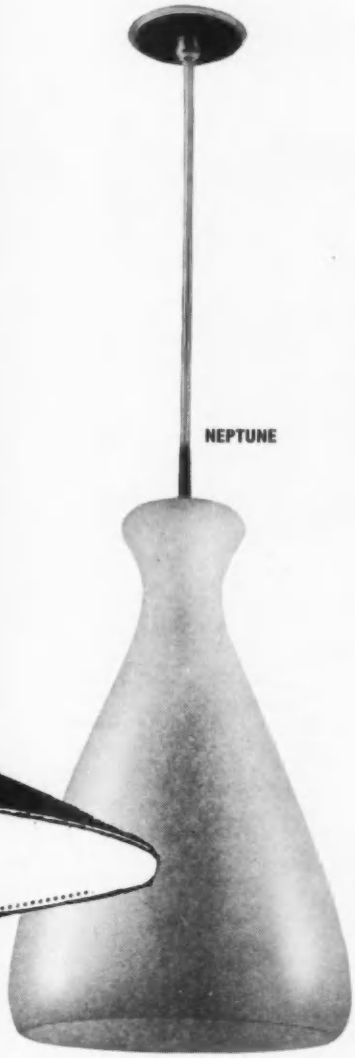
BRITISH GEON LIMITED

Sales and Technical Service
Devonshire House Piccadilly London W1 MAYfair 8867

CALLISTO



EUROPA



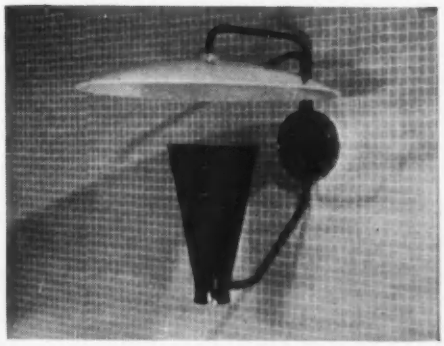
NEPTUNE

Designed by J. M. BARNICOT, M.S.I.A., F.R.S.A.

from the range of contemporary lighting fittings by

FALKS

FALK, STADELMANN & CO. LTD



ALTAIR

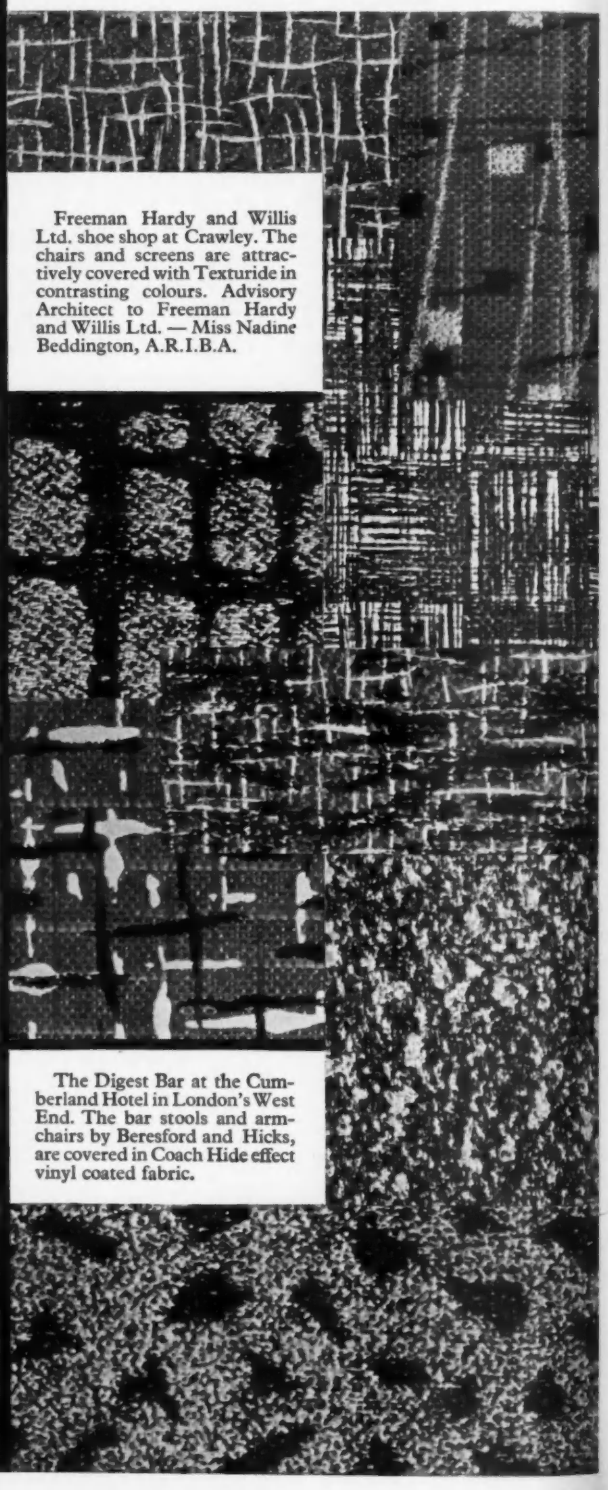
Lighting Engineers and Manufacturers of Lighting Fittings

91 FARRINGDON ROAD LONDON EC1 and Branches HOL 7654 London Showrooms 20-22 MOUNT ST. PARK LANE W1 MAY 5671

AP16

Texturide

attracts an eye for GOOD DESIGN



Freeman Hardy and Willis Ltd. shoe shop at Crawley. The chairs and screens are attractively covered with Texturide in contrasting colours. Advisory Architect to Freeman Hardy and Willis Ltd. — Miss Nadine Beddington, A.R.I.B.A.

An appreciative eye will find much of interest in the Texturide range of vinyl coated furniture coverings. Tibor Reich, F.S.I.A., has created eight designs — each offered in a wide variety of brilliant colours.

Texturide is widely used for nearly all types of seat and chair covering and is equally specified for wall covering, panelling and a variety of mural work.

Texturide has more than just visual appeal — it is also resistant to burns, scuffs and stains. An occasional wipe with a damp cloth or warm soapy water will keep it fresh and clean throughout its long life.

Here is a material giving wide scope to the architect and designer.

Texturide

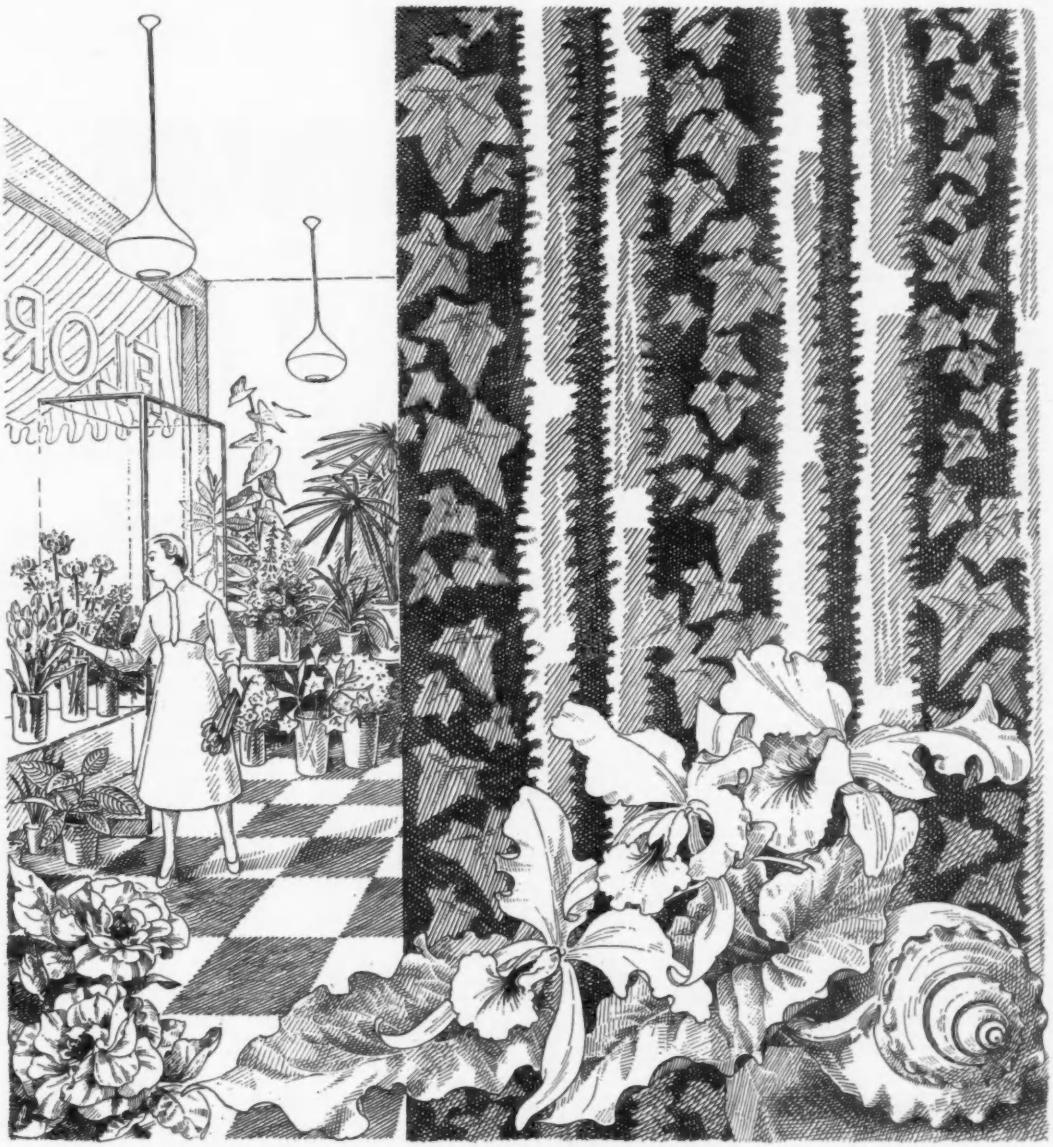
VINYL COATED FABRIC

stands ALL the tests

Selected by the Council of Industrial Design for display at the Design Centre.

Write for full range of samples to :
Architects Advisory Dept., Arlington Plastics Development Ltd., Arlinghide Works, Eastern Industrial Estate, Harlow, ESSEX
HARlow 24611-4

The Digest Bar at the Cumberland Hotel in London's West End. The bar stools and armchairs by Beresford and Hicks, are covered in Coach Hide effect vinyl coated fabric.



Palladio "Woodland" No. 44211. An appropriate theme for the florists shop. Drawing by Gordon Davies.
A Palladio wallpaper won an Award in the "Designs of the Year" Exhibition promoted by the Council of Industrial Design.

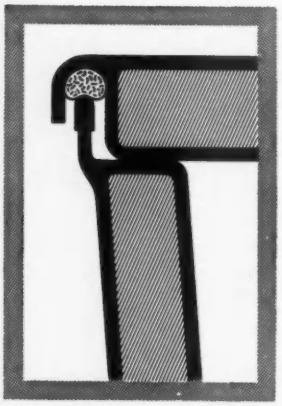
A SERVICE FOR ARCHITECTS

The primary purpose of our ARCHITECTS' DEPARTMENT is to give advice on the use of wallpaper, but we welcome enquiries relating to the interior scheme of decoration as a whole. Our products may be seen at the Showrooms in London and Manchester, and if required we can provide a complete specification incorporating wallpaper, paints, furnishing fabrics and floor coverings. The Architects' Showroom in London is reserved exclusively for the use of Architects, Interior Designers and their clients.

WPM

THE ARCHITECTS' DEPARTMENT THE WALL PAPER MANUFACTURERS LIMITED
125 HIGH HOLBORN LONDON WC1 OR KING'S HOUSE KING STREET WEST MANCHESTER 3

Frozen in FIBREGLASS



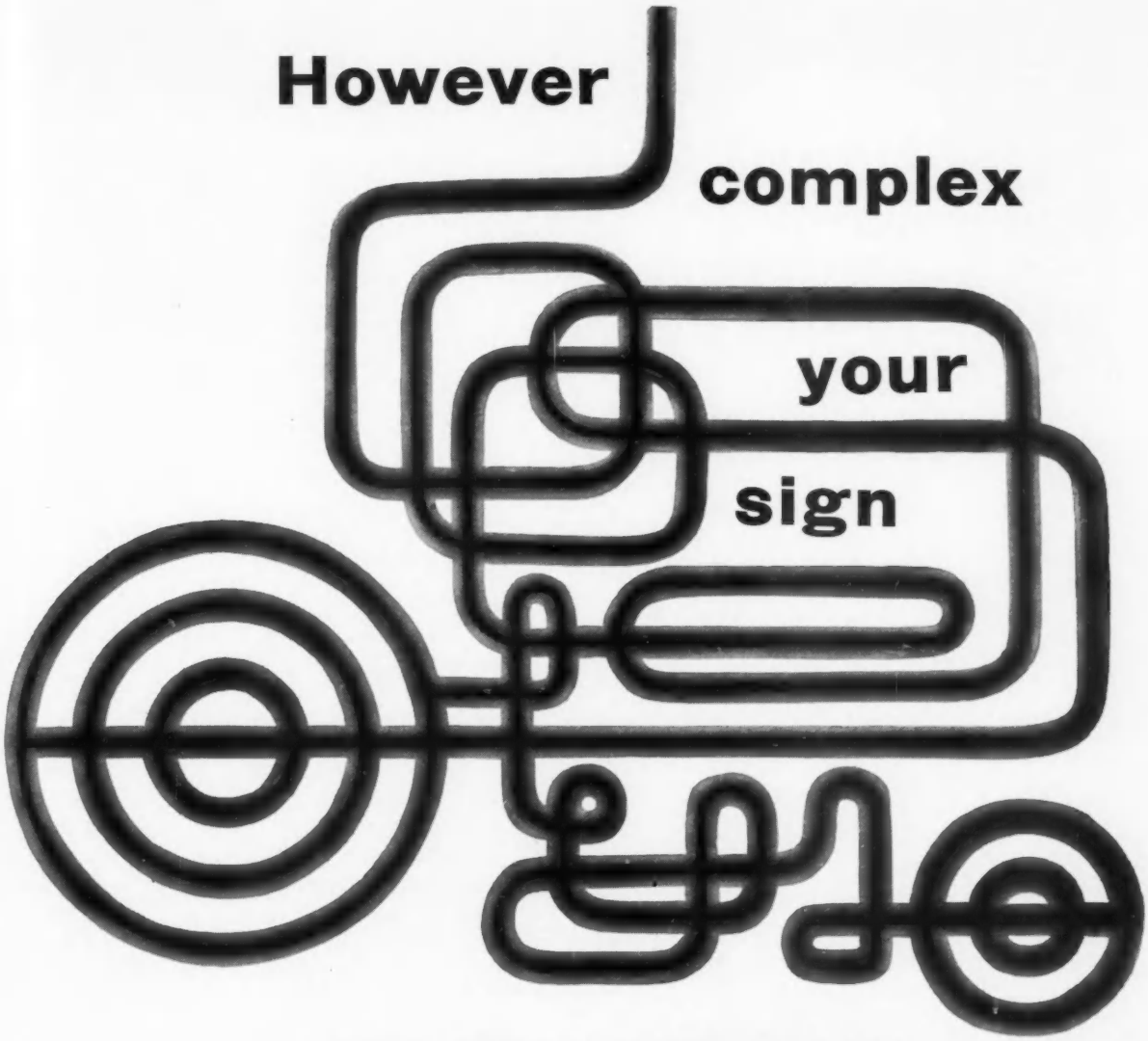
Cross-section of lid and side of container—showing Reinforced Plastic skin and resin-bonded insulation.

MOULDERS: WHITTINGHAM & MITCHELL LTD. RESIN SUPPLIERS: BRITISH INDUSTRIAL PLASTICS LTD.

Frozen food travels first class – when it travels in Fibreglass. The inner and outer skins of this new container are moulded in lightweight, travel-tough Fibreglass Reinforced Plastic. It has a wipe-clean, refrigerator finish. Between skins, Fibreglass resin-bonded slab insulation ensures a hard frost in high Summer – keeping contents in perfect condition from deep-freeze store to destination.

FIBREGLASS LIMITED · ST. HELENS · LANCASHIRE · ST. HELENS 4224

However complex your sign



let CLAUDGEN cope

CLAUDGEN will, if you'll pardon the expression make light of your most difficult neon sign problems.
Nor surprising when you consider that we have pioneered every important advance in neon signs—beginning with the rather important first step of inventing the things back in 1910*—including the fluorescent tube.
A wealth of technical information is at your disposal to convince you why you should call in CLAUDGEN for your next neon sign—complex or simple.
You may, however, be more interested to hear about our sales-design-manufacture-maintenance organization which covers the country.

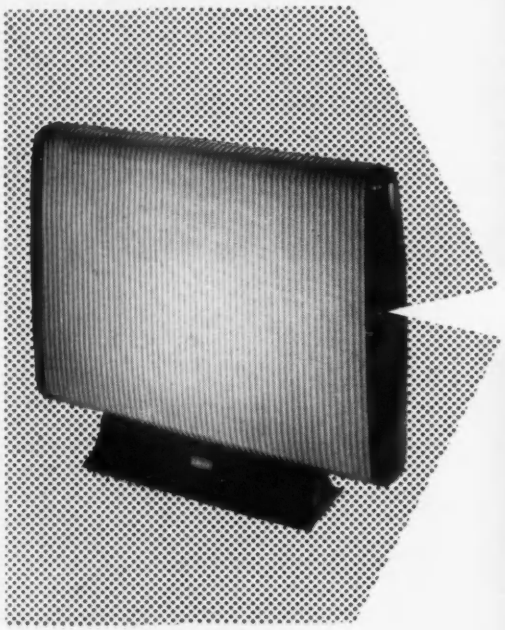
The first neon tube was produced by the famous French inventor, M. Georges Claude, one of the founders of CLAUDGEN.

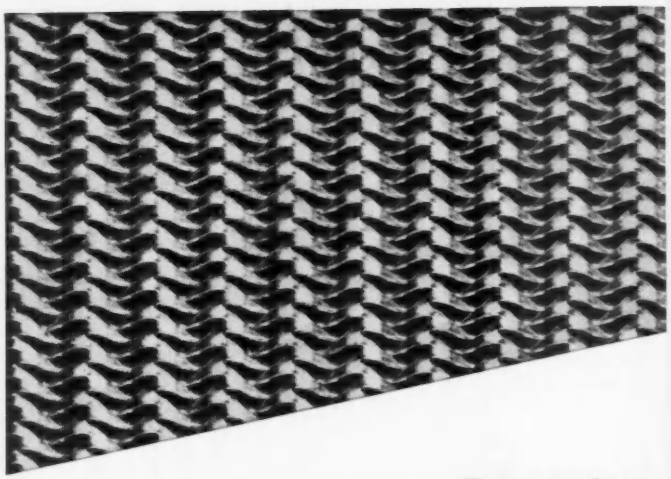
CLAUDGEN
NEON SIGNS

Britain's biggest makers of neon signs—large and small

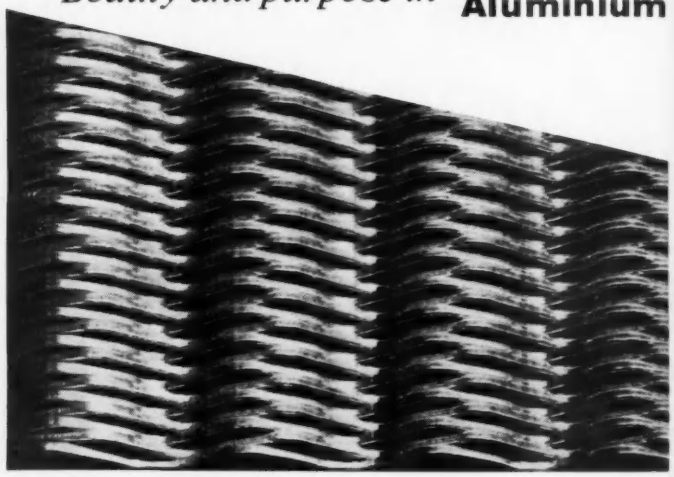
CLAUDE - GENERAL NEON LIGHTS LTD., Head Office, Pitman House, Parker Street, London, W.C.2. Chancery 6711.
Branches and Maintenance Depots throughout the U.K.
A Subsidiary of The General Electric Co. Ltd.

Creda Capri heater by Simplex Electric Co. Ltd.





Beauty and purpose in **Expanded Aluminium**



- A decorative yet practical material. Light, flexible, versatile.
- Attractive surface sparkle and texture, especially when colour-anodised.
- Supplied in a range of shapes and sizes of mesh unique in metal fabrics.
- Widely used in electrical, radio, furniture, vehicle, aircraft and many engineering industries, as well as in display.

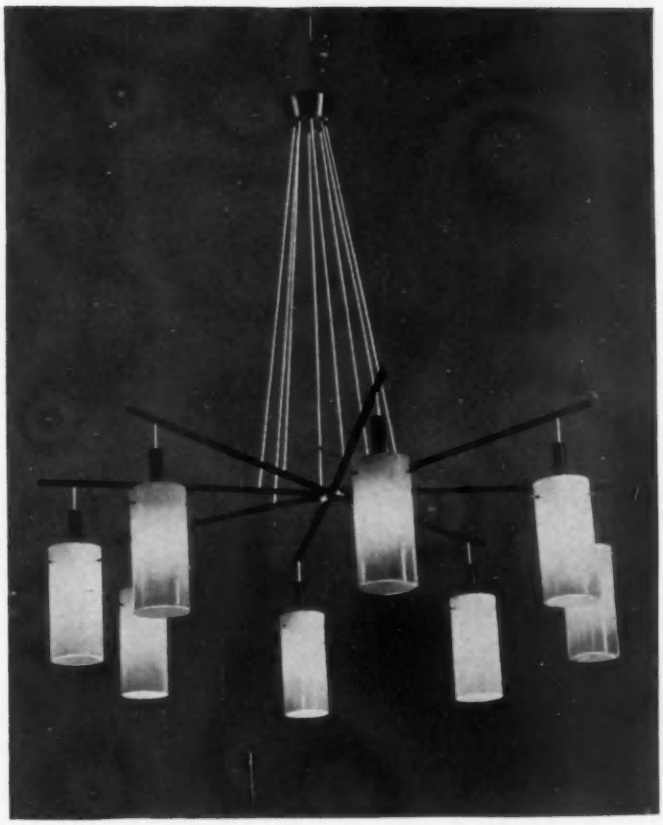
Expamet
EXPANDED METAL PRODUCTS

THE EXPANDED METAL COMPANY LIMITED
Burwood House • Caxton Street • London • S.W.1 *Telephone: ABBey 7766*

Works: West Hartlepool

Also at: ABERDEEN · BELFAST · BIRMINGHAM · CARDIFF · DUBLIN · EXETER · GLASGOW · LEEDS · MANCHESTER · PETERBOROUGH

A G.E.C. FITTING IS ALWAYS DISTINCTIVE



Cat. No. F.34065

Artistry in design is cleverly combined with high technical efficiency and sound construction, providing fittings that please the eye and offer high lighting values.

THE GENERAL ELECTRIC CO. LTD · MAGNET HOUSE · KINGSWAY · LONDON · W.C.2

Always specify OSRAM lamps

hille contract division

ROBIN DAY *designs*

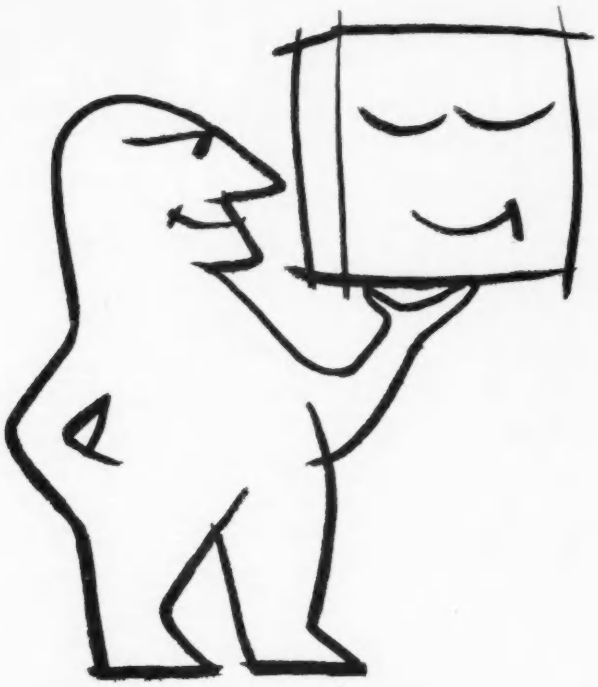
Enquiries to showrooms

Hille of London Ltd

39-40 Albemarle Street London W1 HYD 9576

24 Albert Street, Birmingham 4 Midland 7378/9

'Windsor Castle', a poster designed for London Transport by J. Bainbridge. It is one of the series of full colour prints of famous London Transport posters, which includes the work of Edward Bawden, A.R.A., John Minton, Ivon Hitchens and many others. The average size of the prints is 6" x 5". They can be obtained, price 1s. each (postage 3d.) from the Publicity Officer, London Transport, 55 Broadway, Westminster, S.W.1



Bicycles and Motor Cycles
Building Fittings
Clocks and Watches
Cutlery and Flatware
Domestic Appliances
Domestic Textiles
Floor Coverings
Furnishing Fabrics
Furniture
Garden Tools
Glass
Hand Tools
Hardware
Heating and Cooking Equipment

PROUD OF YOUR NEW PRODUCT?

then submit it for display at

THE DESIGN CENTRE

Laminated Plastics
Lighting Fittings
Metal Ware
Office Equipment
Optical Instruments (including Cameras)
Plastics
Pottery
Radio and TV
Sanitary Ware
School Furniture
Street Furniture
Tiles and Fireplaces
Travel Goods
Wallpaper
Wood and other ware

Manufacturers of the goods listed here are invited to submit their best current designs to:

DESIGN REVIEW SELECTION COMMITTEE

The Council of Industrial Design

The Design Centre, 28 Haymarket, London, S.W.1

FRANCE

M. Jean Royère is an industrial designer of international repute. He expresses below his convictions about colour and forecasts the impact this new thinking will have on our everyday lives.

the language of colour

". . . . Without colour, modern decoration would be dull and monotonous. The disappearance of mouldings, cornices and other architectural ornaments has been compensated by the added importance given to colour effects used to cover large surfaces. Colour has thrown off its inferiority complex and the pale tints of past centuries. Boldness and strength are no longer feared and contrasts rather than nuances achieve new gaiety and youthfulness. All sorts of new materials, including plastics, give countless opportunities for experiments in new effects—it is the start of a new era, one of blue chests of drawers, green sideboards and red writing desks."

Jean Royère

colour matching

If a match is not available from the existing colour range, B.I.P. Chemicals Ltd. will produce a special and exact match of customers' colours, without extra charge, and subject only to reasonable minimum limits on quantity.

The accent to-day, not only in France but throughout the world, is on colour—the language of vision, the oldest language of all, yet only now in course of rediscovery. This tremendously vital trend imposes special responsibilities on materials manufacturers, but it is a responsibility by no means new to B.I.P. Chemicals Ltd. We are always able to offer the widest selection of colours—many hundreds of them—in the Beetle, Scarab and Melmex grades of moulding powder, whilst our Colour Matching sets the seal on this increasingly important aspect of service.

B.I.P. CHEMICALS LIMITED Oldbury, Birmingham Telephone: Broadwell 2061 B·I·P

LONDON OFFICE: 1 Argyll Street, W.1. Telephone: Gerrard 7971

Balding & Mansell

Designer-printers

'Show us the birdie, mister' they clamour in the leaf-lost streets of Stepney. And James Mortimer captures in a breath's space the enquiring wonder of childhood. This photographer is one of the many imaginative artists and designers who work for us. All are skilled at translating experience for the printed page: the elusive poetry of childhood, the thunder of machinery, land or town-scape lit by some fire of wit or pity. Our works, too, experiment continually with techniques to preserve the fresh awareness of the original. As designer-printers we create work that is functionally efficient yet joyously alive.

3 Bloomsbury Place WC1 Langham 6801
& Park Works Wisbech Cambridgeshire

DESIGN magazine is printed by Balding & Mansell

Established in the Reign of William IV

HARLANDS

125th Anniversary Year

For 125 years Harlands
have been specializing in print
Cameo Seals—Tickets—Labels
singly or continuous rolls

M. HARLAND & SON LTD **HULL**

Number 106

October 1957

Design

CONTENTS

23 **The young idea**

24 **Pointers**

25 **Report on railway progress**
British Railways' progress towards the establishment of an effective design policy is considered in the light of an exhibition of experimental rolling stock and equipment held recently in London

30 **Forming sheet metal** *Denis L. Johnston*
Three comparatively new methods of forming complex curves from flat sheet metal are available to the manufacturer whose output does not allow costly investment in mass production tools

35 **The art of showing off** *R. Furneaux Jordan*
A new showroom, recently opened in London, owes its success partly to the decorative qualities of the products it displays, and partly to the skilful co-operation of a team of architects and designers

40 **Decoration in glass laminates** *Geoffrey Salmon*
A glass fibre and sheet glass laminate which has been developed industrially over the past few years is discussed as a decorative medium for architects and interior designers

42 **Review of current design**

44 **Automation and design 3 – the products** *J. Christopher Jones*
It is suggested in the third article in this series that fully automatic production will affect not only our conception of design and design methods, but will radically change our ideas on marketing and distribution

52 **Design analysis 5 – free-standing fire** *J. Beresford-Evans and L. Bruce Archer*
A new free-standing fire, based on a Royal Society of Arts Bursary winning design, is discussed after trials in the home over a period of several weeks. The conclusion, that in concentrating on aesthetic values some functional advantages of this type of appliance have been lost, is commented on by the manufacturer

57 **New opportunities for plastics** *Phillip Morgan*
The second article in this series deals with some of the recent and often surprising applications of plastics to product design

61 **Overseas review**
GERMANY Progress in oven glass
USSR Product architecture *L. Bruce Archer*
ITALY Gas water heater
JAPAN Railway washbasin

65 **Miscellany**

67 **News** 73 **Letters** 73 **Books**

The addresses of manufacturers in this issue are on page 75

EDITOR *Michael Farr*

EDITORIAL ADVISERS *Sir Gordon Russell*
Alister Maynard
Paul Reilly
J. Noel White

ART EDITOR *Kenneth Garland*

DEPUTY EDITOR *John E. Blake*

EDITORIAL ASSISTANTS *Gillian E. Naylor*
Roger Coleman

PRODUCTION *Aubrey Hewitt*

STAFF PHOTOGRAPHER *Alfred Lammer*

BUSINESS MANAGER *Arthur Sudbery*

Manufacturers are invited to consult the Council of Industrial Design's
RECORD OF DESIGNERS
a free service of recommendation and introduction of designers to industry

Editorial Circulation Advertisements The Council of Industrial Design, The Design Centre, 28 Haymarket, London SW1 Tel: TRAfalgar 8000 AND The Council of Industrial Design Scottish Committee, 46 West George Street, Glasgow C2 Tel: Glasgow DOUglas 3914

Design may be obtained from booksellers at home and abroad. Yearly subscription rate: UK 36s post free

PROFILE OF A CREATIVE MIND

No. 4 *Engraver*

Famous as a satirist and humorist on canvas, William Hogarth (1697-1764) was first apprenticed as a silver-plate engraver. Even at the age of 20, Hogarth regarded engraving as the limit of his ambition. But his exceptional eye-memory led to greater achievements.

Petr De la Fontaine GOLDSMITH
At the Golden Cup in Litchfield Street
SOHO. Makes, & Sells all Sorts of Gold & Silver
Plate, Swords, Rings, Jewells &c, at ye lowest prices

During his apprenticeship, Hogarth speedily became skilful at his craft, learning to chase salvers and tankards, and trying his hand at copper-plate engraving. Though they perhaps lacked the skill of a draughtsman, Hogarth's engravings nonetheless showed great vigour. In place of finish he displayed spirit, and if beauty of line was not apparent the emphasis was upon intelligibility of the subject; Hogarth produced designs that told their story plainly yet boldly. Aware of his early shortcomings as a draughtsman, he set out to acquire this skill by patient study. But there is little doubt that his marvellous power for seizing expression owes more to his unexampled visual memory and scrupulous attention to detail.

In I.C.I., creative minds are constantly searching for new products and processes, and for improvements to existing ones.

ICI

The young idea

ONE OF THE IMPORTANT RESULTS of the social and economic changes of the last decade is the increase in the purchasing power of young people. Most of them now have well paid jobs in their late 'teens and early twenties and represent a sizeable slice of the national income. This economic power has naturally encouraged feelings of independence and self-expression which have asserted themselves in many ways, both good and bad. It is typical of the situation that the results are mixed, but the incidence of juvenile crime and the expensive wardrobe of the teddy boy are by no means the whole story.

Now that young people are feeling their economic feet and appreciating that they are a force to be reckoned with, they are expressing their preferences with confidence. A few are angry young men and women bent on reformation or destruction, but the greater part are sensible and modern minded, determined to establish the standards of their own generation. They question, as well they may, accepted forms and patterns with a freedom from prejudice which is often constructive. Although their standards are uneven there is a progressive element which is likely to have a real influence on consumer choice. As one elderly visitor observed of a modern pattern on a plate when she was interviewed in The Design Centre by the BBC: "Imagine eating a kipper off that – but, you know, my daughter would like it".

In many respects the young now have opportunities to improve their judgment at the critical age when their own standards are being formed. Schools pay much more attention to visual education and some of their new buildings are fine examples of modern architecture. Many youngsters can afford to travel and compare their values with those of people with very different backgrounds. They comprise a healthy proportion of the attendance at concerts, museums and exhibitions, and a recent survey has shown that visitors to The Design Centre are young in relation to the age structure of the general public. The advertising profession is well aware of the importance of addressing itself to young people under 30 who buy the great proportion of durable goods sold in this country, largely because they are setting up home. But in general less attention is paid to the trend within the age group towards better and more up-to-date standards of quality and design.

This trend is not likely to halt. The 6,500 senior school children who have already made the excursion to the Haymarket are obviously enthusiastic converts. Soon they will join the ranks of the young consumers; and as recent articles in DESIGN on consumer needs have shown, the atmosphere in that company is, to say the least of it, somewhat restless. The recent formation of a Consumer Council by the British Standards Institution is most timely and it deserves the active support of all shoppers, and particularly those energetic young people who are anxious to improve the efficiency, convenience and appearance of our manufactured goods.

Pointers

Master builder

The recent Telford bicentenary exhibition at the Institute of Civil Engineers brought forth a number of sermons from engaged sections of the Press on the subject of what lesson the first president of the 'Civils' held for modern engineers. In a foreword to the exhibition catalogue the reigning president drew attention to the dangers of ignoring the past, and reminded us that Telford "allied his skill and enterprise to knowledge culled from the study of Egyptian, Greek, and Roman architecture". In combining his engineering skill with an appreciation of the antique, Telford was merely doing what his age expected of him, the basis of his approach was no different from that of any of his gifted contemporaries. But what distinguished him from his contemporaries was, on the one hand, an intense professionalism which included an extraordinary capacity to anticipate the aspirations of his clients, and on the other an imagination, similar to that of Turner's in its scope and intuitive power, which enabled him to create precise symbols of his time.

It would be a mistake to seek in Telford the beginnings of a strictly functional approach to building, functional that is, in the sense we consider Maillart's bridges to be. Stylistically, he was, like his age, eclectic; but that is not important. Telford stood at the beginning of the Industrial Revolution and understood perfectly the potentialities of the future. His lesson for us then, as we stand at the beginning of what has been called the second industrial revolution, is not the manner in which he built, but the spirit which guided his work.

Centre on East 53rd

America's furnishing industries have never lacked space for the display of their wares. Chicago's enormous Furniture Mart and the even bigger Merchandise Mart, claimed to be the largest building in the world, display everything from the best to the worst for the benefit or otherwise of the trade. What has been lacking, apart from the brilliant but specialised 'Good Design' exhibitions, has been a *permanent* and *selective* display both for the trade *and* the public.

The opening of an Interior Design Centre in New York, comparable in some ways with Den Permenente in Copenhagen, the Forum in Oslo or our own Design Centre, should therefore fill a long felt need.

Situated on East 53rd Street, in the fashionable decorators' quarter, it displays a wide range of goods related to interior design and decoration. All products are selected by an independent panel, though the exhibits are shown on manufacturers' own stands. The stands themselves, however, must also be of a standard acceptable to the panel.

Designed by Tom Lee, the centre, which covers about 40,000 sq ft, forms part of a larger Decorators' Mart, and will clearly attract custom for the firms whose services are advertised there.

American interiors for British aircraft

Charles Butler the American consultant designer, whose 'Viscount' aircraft interiors for Capital Airlines were discussed and illustrated in DESIGN for March 1956, has clearly established a wide reputation for his work in this field. He has already been commissioned to design the interiors of other British aircraft which are now, or will soon be, coming into service, including 'Comet 4's' for Capital Airlines, 'Vanguards' for TCA, 'Viscount 800's' for Continental Airlines and 'Britannias' for Northeast Airlines. His work is not confined, however, to airlines in America. Hunting Clan Air Transport Ltd, a British private operator, has commissioned him as consultant for the interiors of two 'Britannias', which he is preparing in conjunction with the Interior Furnishing Department of Bristol Aircraft Ltd. Hunting Clan believes that American aircraft interiors excel in their clean lines and sense of comfort and that few British designers possess the necessary specialised experience. Mr Butler is emphatic that, to be successful, aircraft interior design should be given full consideration at an early stage in the development of a civil airliner.

A suggested lounge for the new 'Comets', shown as a sectional mock-up on the de Havilland stand at Farnborough last month, is a sad reflection on the firm's attitude to this problem. Can the curly, gold painted metal screens, brocade-type seat coverings and art lampshades really have been considered as a suitable accompaniment to the clear aerodynamic lines of this beautiful aircraft, models of which were displayed, in ironic contrast, nearby?

Two-way self servicing

The need for direct contact between maker and user has been a recurring theme in our series on consumer needs. Perhaps the industry most anxious to know why people buy one design rather than another is the packaging industry, and yet the means of achieving the information have appeared forbidding. Now, on a local scale, The Metal Box Company has solved the problem by opening a self service store as an integral part of its new London offices.

The store operates as a normal commercial enterprise competing with other stores in the area. But it is intended that the sales staff moving about the shop should contact customers to obtain their opinions on old, new and experimental designs. The company's own containers, as in other stores, form only a part of the display and so comparisons can be made between them and their competitors. The information gained could prove to be a basic asset to the design departments at Metal Box.

The special 'Railways' issue of DESIGN, *published in September* 1955, *stressed the urgent need for a progressive and co-ordinated design policy for British Railways if the modernisation plan, announced earlier that year, were to succeed in its aims. The following report sums up progress towards this objective in the light of a recent exhibition of railway equipment.*

REPORT ON RAILWAY PROGRESS

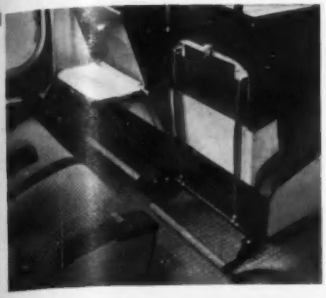
SINCE THE ORIGINAL ANNOUNCEMENT of the modernisation and re-equipment plan for British Railways, involving the expenditure of £1,200 million, members of the public have anxiously awaited news of how their travelling requirements are to be met in the new rolling stock and equipment that the plan envisaged. Now curiosity has been partially satisfied by an exhibition of 'Modern Railway Travel' held recently in London by the British Transport Commission, including 13 experimental passenger vehicles, several diesel-electric locomotives and a new range of waiting room furniture.

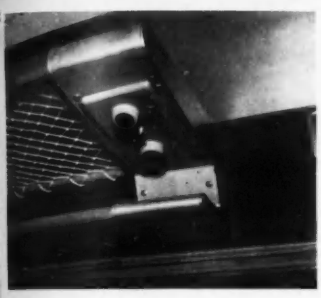
The majority of the exhibits represent no more than a general indication of ideas that a number of private carriage builders and British Railways' engineers have been considering during the past two years. The examples of passenger rolling stock particularly are in no sense prototypes of what the travelling public may expect to find in service a few years hence. Although all carriages are being tried out on various routes, and passengers' opinions recorded in an extensive market research campaign, there is no indication that any single coach is being selected for general production. Partly on the basis of these investigations, and partly on the BTC's estimates of future operational requirements, a final specification will be drawn up and new designs commissioned which will eventually be put into service as standard equipment.

Readers may well consider this process to be an unduly lengthy and expensive method of arriving at a satisfactory solution to what may appear to be a comparatively straightforward exercise. Indeed a brief review of the carriages on show confirmed that few attained a standard of design that the BTC would now consider remotely acceptable. In some coaches fundamental aspects of design such as correct seat dimensions, or the economics of operation in terms of seating density, had been given little serious consideration, while decorative treatments in a few instances revealed a retrogression from the standards already achieved in the days of the Railway Executive.

The reasons for this two-stage design process and the variety of suggested solutions may be found firstly in the commission's original lack of assurance on what the exact requirements are, and secondly in its present concern to obtain the best possible answer for designs that will be in service for 20 years or more.

Since the publication of the special 'Railways' issue of DESIGN it was heartening to learn that the commission had decided to set up a design panel (including W. J. Worboys, chairman CoID, and Sir Gordon Russell, director CoID) under the chairmanship of T. H. Summerson, chairman of British Railways' North Eastern Area Board, to advise on all matters affecting the amenities and appearance of transport equipment. Priority is being given to the establishment of the type of policy urged in the 'Railways' issue. Recently a design officer was appointed to give effect to the





panel's recommendations, and thus the machinery now exists for translating policy into practice.

Prior to this new organisation, quantities of rolling stock and equipment had been put in hand that fall short of the high standards now being set by the design panel. The bulk of the equipment shown at the 'Modern Railway Travel' exhibition was commissioned before the panel was formed and no single coach is now likely to be considered as the ideal solution. The fact, however, that the six private firms and the workshops of British Railways were largely given a free hand, within the limits of the standard British loading gauge, provided opportunities for new ideas that otherwise may never have seen the light of day. As it happened some extremely useful innovations were put forward – reclining and revolving seats, aircraft type reading lights, new ventilation and heating systems, methods of noise insulation, etc – which the design panel will have carefully considered in its recommendations to the commission. It was disappointing, however, to see that little thought had been given to the differing functions of first and second class travel, though an examination of travellers requirements might reveal that other factors are more important in a first class coach than extra space and comfort.

Apart from the work shown in the exhibition, new projects are going ahead under the panel's guidance with the assistance of many well known British designers, and news of these will be released by the commission at a later date. In the meantime it should be remembered that, as far as rolling stock is concerned, the real first fruits of the modernisation plan are still to be tasted.

Photographs **1, 2, 3, 4** *on this page,* **6, 7** *on page* 28, *and* **11, 12, 13** *on page* 29 *are by Sam Lambert*

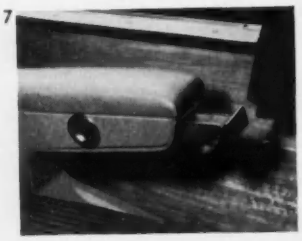
1st and 2nd class open coaches

INTERIOR DESIGNERS *Farmer & Dark*
Built by Cravens Ltd

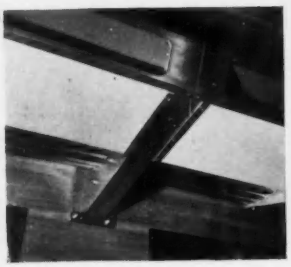
Both first and second class coaches incorporate reclining seats and represent perhaps the most forward looking approach of the vehicles shown. The first class coach, OPPOSITE PAGE, has three abreast seating in a two-and-one arrangement with an off-centre gangway. Seating in the second class, **5**, is four-abreast with a centre gangway. Folding tables are fixed to the backs of first class seats, **1**, and are designed so that they remain horizontal when the back is reclined. A sense of lightness and space is due chiefly to the larger-than-standard windows, **2**, which are double glazed and in the first class coach enclose adjustable Venetian blinds. Continuous luggage racks which in the first class incorporate aircraft type reading lights and call button, **3**, and the treatment of the curtains, contribute to a sense of unity. 'Warerite' is used for the wall finish, **4**, and slotted PVC panels for the ceiling with a central 'Perspex' strip to diffuse general lighting from concealed fluorescent tubes.

6

7



8

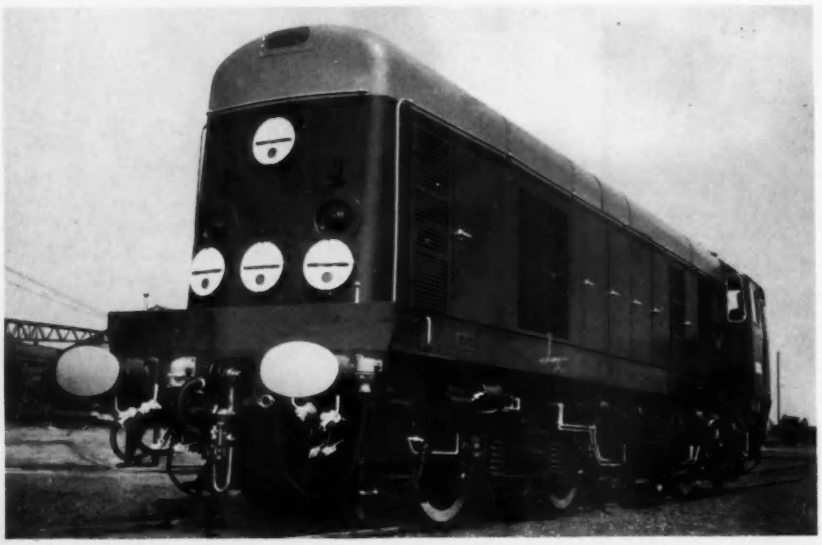


1st class open coach

INTERIOR DESIGNER *Trevor Dannatt*
Built by British Railways

This design makes use of revolving seats in a two-and-one arrangement with an off-centre gangway, **6**. The seats themselves are elegant and inviting, and are designed so that they can either face all one way or may be swivelled to face each other. The backs can be reclined in four positions within a seven-inch movement, and are controlled by the button built into the arm rest, **7**, which also incorporates a pull out ash tray. Luggage racks, **8**, have been carefully considered and have separate compartments for small personal effects. Aspen veneers for the walls and teak matchboarding for cross partitions combine with the choice of moquette and leathers to produce a sophisticated interior. Fluorescent lighting is used in a continuous strip down the centre.

9



Locomotive

DESIGNER OF BODYWORK *Professor R. D. Russell assisted by Vilhelm Koren and Frank E. Dudas*
MAKER *English Electric Co Ltd*

9 Cleanest looking of the three locomotives at the exhibition was this 1,000-hp mixed traffic diesel-electric locomotive, the first of a batch of 20 ordered under the modernisation plan. Controls in the single cab are duplicated to allow the locomotive to be driven in either direction. Doors along the side provide access to the interior for maintenance.

11

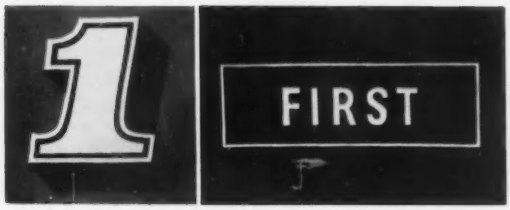
12

1st class open coach

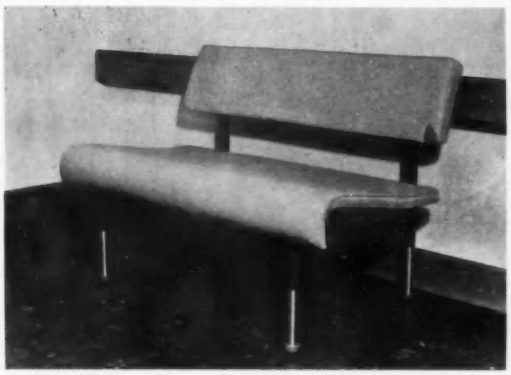
INTERIOR DESIGNER *Sir Hugh Casson*
Built by The Birmingham Railway Carriage and Wagon Co Ltd

The designer has given a club room atmosphere to this coach, **10**, darker and more sober than the previous examples, because of the more widely spaced windows, and the expanse of Australian walnut veneer which covers the walls. Seats are three-abreast in facing rows and have reclining backs. Removable tables between the seats are supported on tapered tube legs, **11**. As in the coach by Cravens Ltd, aircraft type reading lights are mounted in the luggage rack brackets, **12**. Particular attention has been paid to the design of window labels and door numbering, **13**, the rectangular frame around 'first' being a considerable improvement on the standard BR lozenge. The open carriage arrangements were generally the most successful of the vehicles shown and seemed to provide greater opportunities for ingenuity of design.

13



14



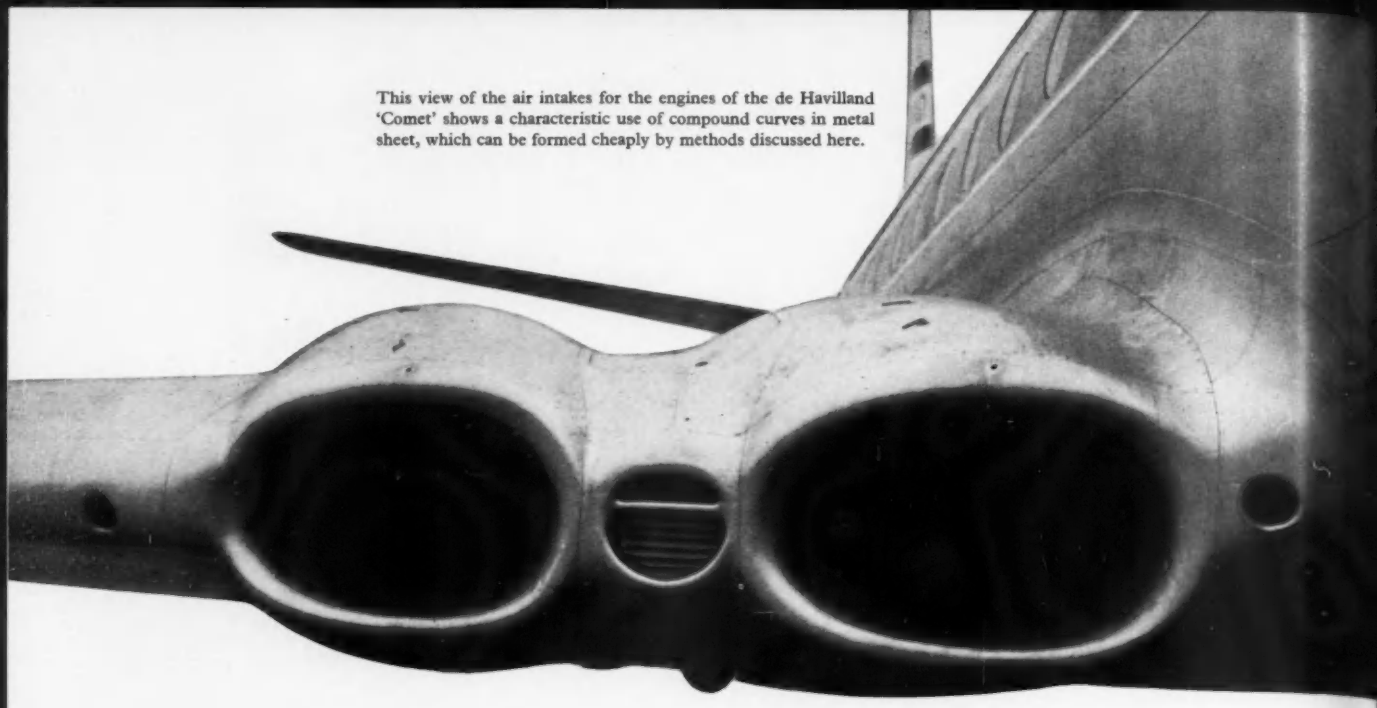
15

16

Waiting room furniture

DESIGNER *Robin Day*
MAKER *S. Hille & Co Ltd*

This elegant and sturdy range of waiting room furniture has been designed to specifications laid down by the Eastern Region's architect. The sturdiness is derived from the use of a welded steel under frame for all pieces, the base of the legs being fitted with a stainless steel sleeve to minimise damage from kicking. Upholstered seating units, **14**, have a 'Vynide' covering over hard rubber backing on formed plywood. Polished makore is used for the slatted seats, **16**, and for the table top, **15**. This furniture has already been introduced in a number of modernised Eastern Region waiting rooms which set a promising standard.



This view of the air intakes for the engines of the de Havilland 'Comet' shows a characteristic use of compound curves in metal sheet, which can be formed cheaply by methods discussed here.

Forming sheet metal

DENIS L. JOHNSTON

Many products manufactured in small quantities have a characteristic box-like style which results from the traditional methods of fabrication with flat metal sheets. In this first article of a new series the author describes three inexpensive methods of forming complex curves in sheet metal and suggests that a wider application of these techniques would result in functional and aesthetic improvements.

A PRODUCT DESIGNER is never free of the limitations of the manufacturing processes available to him, especially when devising structures in sheet metal. Curved forms, achieved in quantity production by the use of expensive steel dies, are not economically possible for products manufactured in smaller quantities. Complex curvature in a variety of products has become associated with mass production, and two dimensional or rectilinear forms have come to imply short-run production.

In the competitive export markets British firms have sometimes suffered unfavourable comparisons on this account, particularly in consumer goods and business equipment. The newer materials such as plastics, wood or paper laminates and resin-bonded fibre have been presented with a certain glamour which has encouraged their imaginative use. Meanwhile progress has also been made in forming sheet metal at moderate cost, opening new possibilities for future product designs manufactured in relatively small quantities.

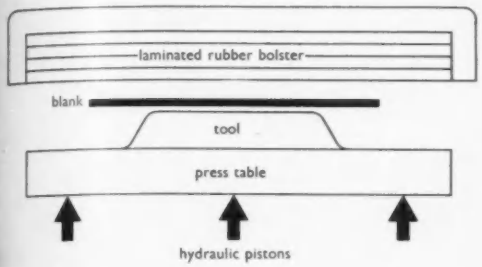
Traditional methods of fabrication with flat sheet metal are common among firms producing office furniture and equipment, housings for scientific instruments, casings for a variety of domestic appliances, etc. Simple bent panels, as seen in typical filing cabinets, are produced by the conventional brake press or bending machine giving sharp corners with usually about $\frac{1}{8}$-inch radii. The structure is stiffened by bending edges to a three- or four-sided open box section, with a minimum of tack welding, the material thicknesses being 18–22 swg, which is of the same order as those used in motor body construction.

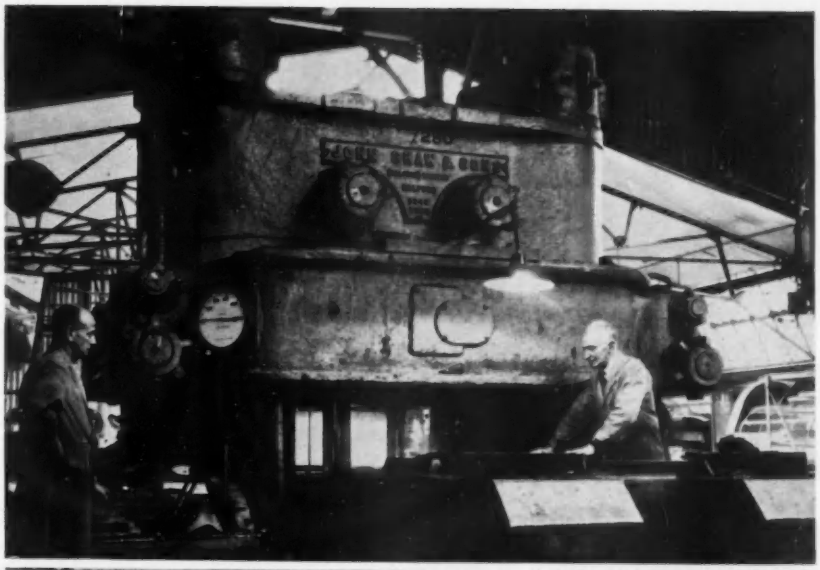
Such structures depend for their aesthetic appeal on the positioning of the joint lines which can produce a satisfying composition of rectangles if the panels are well proportioned. The slightly radiused edges will also conceal misalignments of $\frac{1}{16}$–$\frac{1}{8}$ inch. Motor body sheet of up to 84 inches wide can now be rolled at the new mills of the Steel Company of Wales, allowing very large panels to be employed.

An alternative method widely used for the small quantities that arise in housing scientific instruments, industrial control equipment, machines and computers is a fabricated structure of frames and panels. Extruded metal radiused sections are used for the frame,

Rubber bolster press

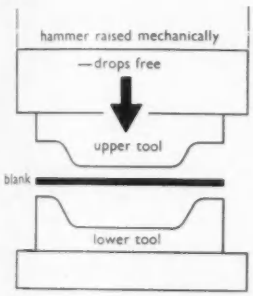
A simple male tool of densified wood, cast epoxy resin or lead presses the metal sheet into a laminated rubber bolster, forming the second half of the tool. This press, at Western Manufacturing (Reading) Ltd, has a capacity of 5,300 tons on an area 6 ft by 4 ft.

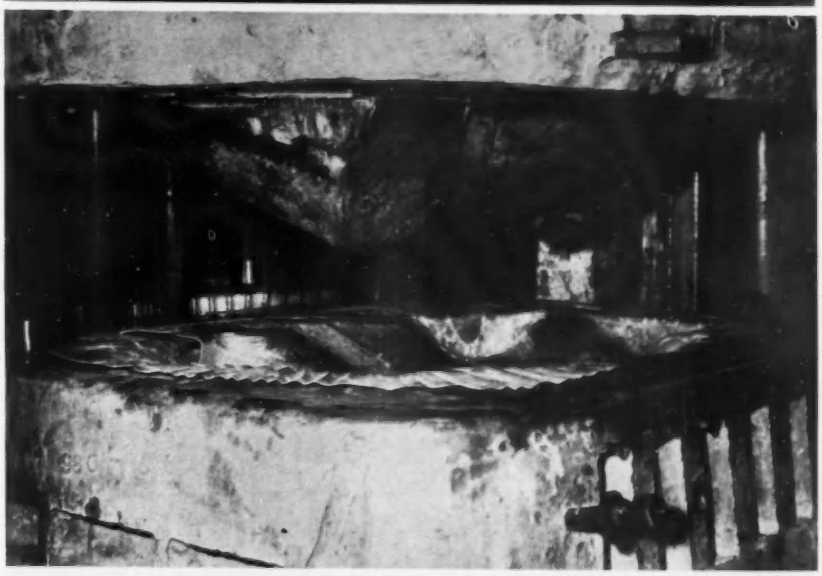




Drop hammer press

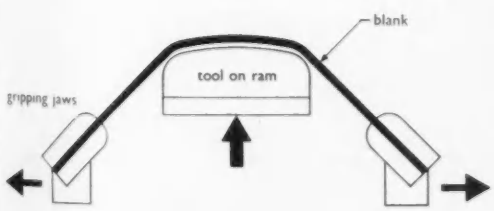
Male and female tools can be cast in lead or other low melting point metal. The photograph shows the tools after operation in one of the presses at Western Manufacturing (Reading) Ltd.

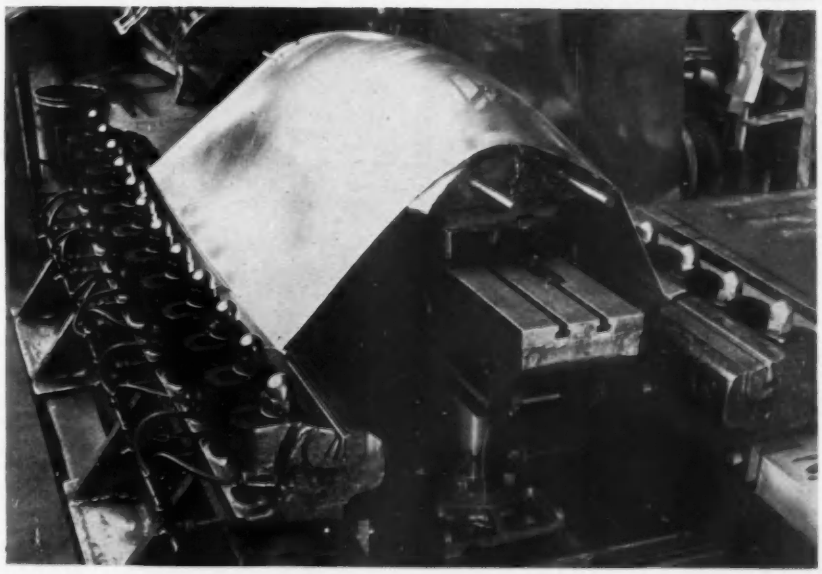




Stretch forming

This method of forming sheet metal by stretching it over a wooden model is used extensively for the bodywork of motor coaches. The stretch forming machine shown here is at Duple Motor Bodies Ltd.





Forming sheet metal

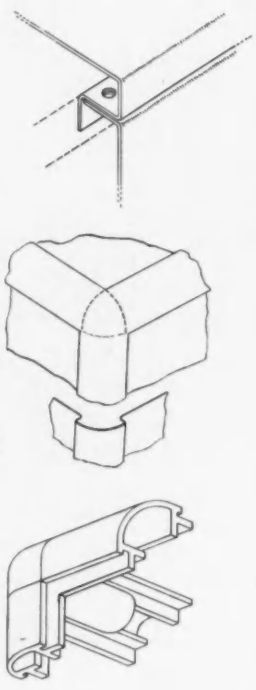
and the diecast corners provide an economical solution when edge and corner radii of ½–1¼ inches are used. These dimensions are appropriate to the scale of the smaller types of equipment. For larger equipment with radii of 1½–3 inches or more, drawn sheet metal sections and pressed hemispherical sections may be joined by welding to produce a fairly economic framework rigid enough to carry considerable loads. The panels within these frames are normally flat, but recessed or domed panels may also be required.

In general, the use of flat sheet metal is technically undesirable when a large area of thin section is required. It does not contribute to rigidity and may have unsightly bulges or be subject to drumming and acoustical resonances. These difficulties can be avoided by providing the slight contour, which is familiar to us in mass produced car and refrigerator door panels.

Techniques for forming sheet steel with large hydraulic presses and steel dies reached their height in the middle 'thirties, when pressed and welded chassis-body construction, of high strength-weight ratio, became general in the motor industry. Very deep draws were achieved in pressings for such items as front wings, but the tendency ever since has been to adopt panels of shallower curvature typical of the continuous horizontal line of the side panels in post-war cars, and the shallow roofs spanning windows of considerable area.

In aircraft manufacture the tendency towards higher speeds increased the importance of skin fairings of compound curvature, such as we see on jet aircraft. Under the impetus of the last war, techniques were evolved for forming and stamping such panels with a fraction of the outlay in time and money normally found in body tooling for the automobile industry. These methods found application after the war in forming panels for the characteristic knife-edge body styles of several of the makes of cars manufactured only in medium quantities. Thus designs conceived in three dimensions, which at one time were suitable only for mass production, have become economically possible for much shorter runs. This is not generally appreciated, however, outside the motor and aircraft industries where these methods are familiar.

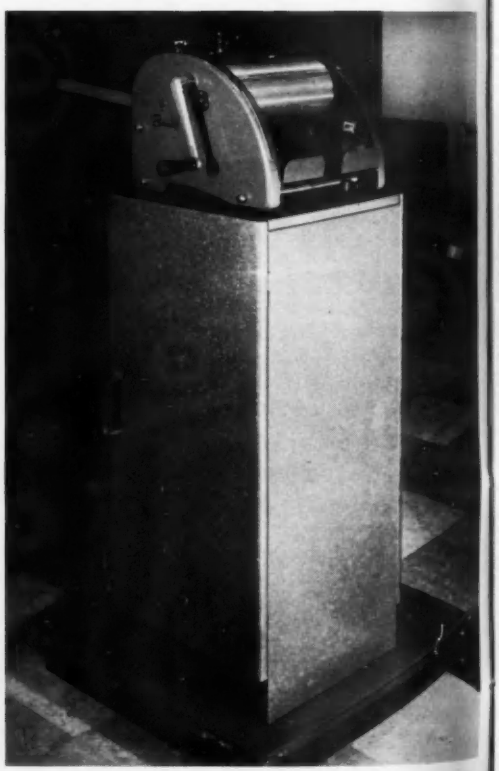
The designer of enclosures for scientific, factory or office equipment may feel that compound curvatures are aesthetically desirable, or a manufacturer may wish to test market reaction to a new product before he undertakes the expense of tooling for mass production. In either case the use of resin-bonded glass fibre may be considered. Panel beating in metal may be accepted for one model or a small number, but for quantities in the hundreds or thousands it would be too costly. The

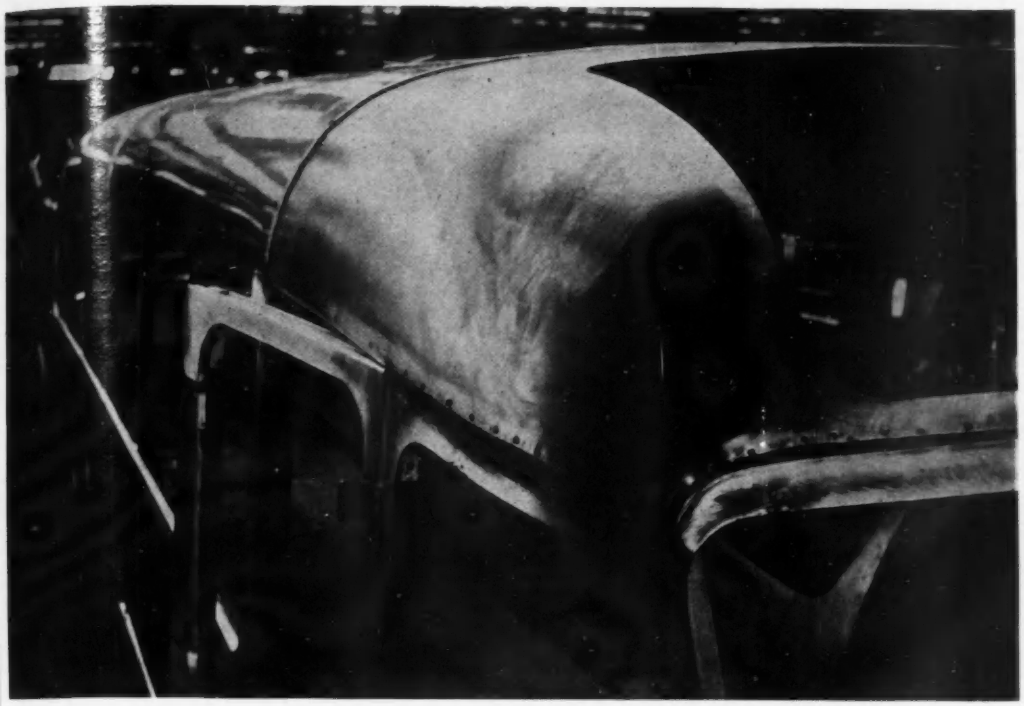


Diagrams showing traditional methods of fabrication using flat sheet metal: **a**, office furniture with corners bent on a brake press and spot welded, with a small amount of flame welding; **b**, panel and framework construction for large housings - the framework is made of sheet metal sections formed on a brake press and fusion welded at the corners to quarter-hemispherical pressings; **c**, a proprietary panel and framework system for small housings using extruded metal frames and die cast corners by Alfred Imhof Ltd.

The three pairs of photographs on this and the opposite page have been chosen to show how the use of compound curves might improve, from either the aesthetic or functional points of view, widely differing types of product.

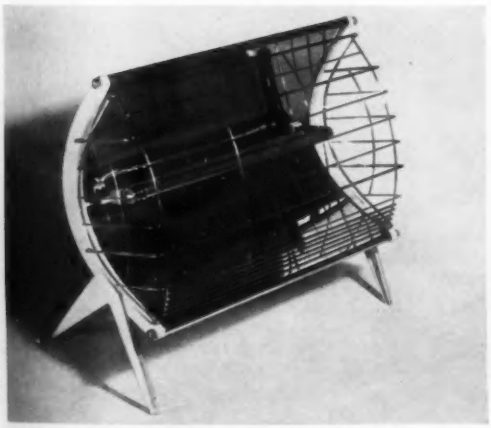
Sheet metal formed on a rubber press could produce the type of shallow curve of this Morphy-Richards refrigerator door, BELOW LEFT. Used for the cabinet of the 'Banda' duplicator, BELOW, it could contribute a greater stiffness and stability than the existing cabinet, using flat sheet, possesses.

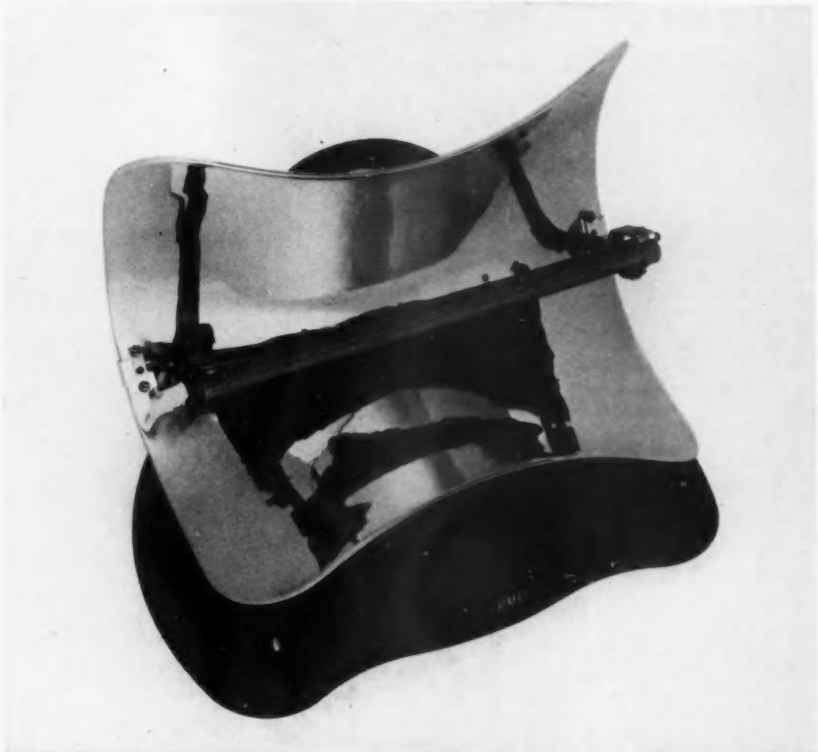




The curve on the corner section of this coach by Duple Motor Bodies Ltd is produced by stretch forming and is visually more satisfying than the angularity of the wartime utility bus, RIGHT.

A reflector curved in two dimensions, as in the fire by Ferranti Ltd, BELOW LEFT, does not have the functional advantages of a reflector curved in three dimensions which radiates heat in wide arc, as in the H M V fire, BELOW, shown here without its guard. The double curve could be produced on a drop hammer press, though in this fire the treatment of the base and guard could be improved.





most suitable alternative may well be one of the three methods of forming sheet metal described below.

The rubber bolster press is one of the comparatively new methods, particularly useful for shallow draws over large areas, as when stiffening panels by embossing. A simple male tool is adequate, and may be formed relatively cheaply from densified wood or be cast in epoxy resin. The sheet metal is laid over this form, and pressed upwards into a large blanket or bolster of rubber, which may be 10 or more inches thick. When subjected to a pressure of several thousand tons, the rubber forms the second part of the die, while drawing the metal sheet into the shape required.

Drop stamping is a further method in which a life of several hundred parts can be achieved with pairs of moulds of lead or alloys of low melting point, and these moulds can be cast directly from a model or prototype formed by panel beating. The tooling cost for a formed panel 2-ft square need not exceed £100 if the mould metal is recovered after use by melting down; only a sample being retained as a model for use again in the future. A similar pair of moulds in steel would cost 10–30 times as much.

A complicated shape of panel can usually be produced by a composite process. For example, a deep recess is formed by drop stamping, and then a gentle overall curvature produced with a rubber bolster press. Special details can be completed by fusion welding.

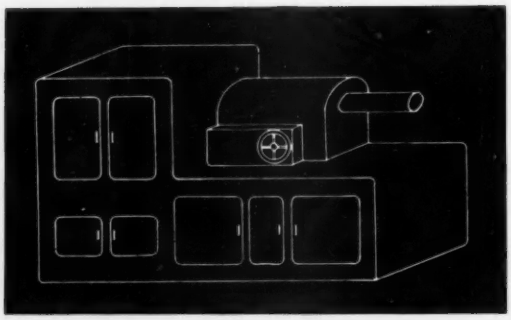
Stretch forming, the third method illustrated in this article, is carried out by gripping the edges of a sheet of metal and stretching and drawing it down over a model of the shape required. This model can be constructed relatively cheaply in wood, or be a hand-made prototype filled with concrete, if only a small number of parts is to be formed. The method is specially useful for very large sheets of metal beyond the length and depth of draw possible with the rubber press.

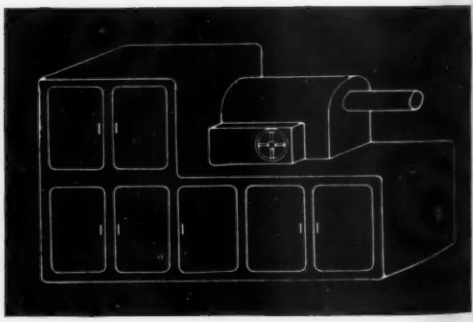
Economy through standardization

In comparison with the designers of cars or domestic appliances, the designer who is engaged on products to be manufactured only in medium and small quantities is handicapped in his choice of detailed accessories. It is uneconomic to design and tool up for short runs such details as hinges, knobs, handles, catches and rubber mouldings and gaskets.

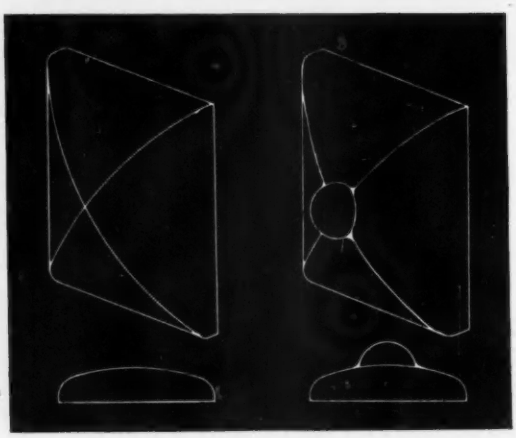
In electronic computers one solution pioneered in Britain has been to divide the circuits into a large number of small mechanically similar sub-units, which are themselves a convenient feature for interchangeability in servicing. The numbers of the small units are then sufficient to justify setting up simple tooling from which the details can be produced. Similarly, a modular approach to the design of panels and doors is desirable so that a single size of panel pressing may be employed.

A standard press button car door handle can be appropriate to the door of a cabinet forming part of a refrigerator or an electronic computer, but rather heavier fittings would be more suitable in equipment to be installed in a ship or a machine shop. The provision of an illustrated reference for current industrial equipment of this type on the lines of the CoID's photographic and sample record 'Design Review' would be of inestimable value to the designer.





Tooling costs can be saved by standardisation. The shallow doors in the example, ABOVE, could be produced from one tool, while four tools of different sizes would be needed in the example ABOVE LEFT.



Complex shapes can be produced by a combination of processes. The shallow form, far left, could be made on a rubber bolster press, while the deep centre pressing, left, could be produced by the drop hammer.

The art of showing off

R. FURNEAUX JORDAN

A showroom, recently opened in Regent Street by Thomas De La Rue & Co Ltd, has been designed by Design Research Unit to display the firm's many products, which include fountain pens, playing cards, boilers, cookers and plastics laminates. The integration of these varied items and the introduction of a house style show the way out of a dilemma in the design of commercial displays still to be resolved by many firms.

The Regent Street entrance has a black bronze frame surrounding the plate glass. The frame to the doors and transom are of stainless steel and the facia is black Belgium marble. The reveals to the window are ¼-inch teak veneer. On the left, inside, a mirrored wall reflects the staircase. The redesign of the firm's Gothic script on the facia, and the new design for the logotype, LEFT, which is sandblasted into the window, are the work of Ronald Armstrong, with Milner Gray and Misha Black as consultants.

THE WEST END is there to fool us. Commerce, when it has genuine aspirations to art, aesthetics, taste – call it what you will – is in a dilemma. Whatever it does is suspect, part of the racket of the age, of that exploitation of art in the great conspiracy to separate a fool from his money. As one's sales resistance increases, so does the racket. In this art spiral there is nothing left that has not consciously used, debased or defiled the whole gammut of design clichés. This is true at, so to speak, both ends of the scale; the newest Espresso gimmick and the tailor's wire blinds are equally part of the game. In a wholly smart world dowdiness becomes prestige. The marble and the sand sculpture of Olivetti, New York, and the sawdust floor of an old wine dive are equally amoral; they are there not because of merit, but only to beguile, and neither is genuine. It is, in the long run, the potential taste of the potential customer that the merchant must express, not himself. This is not wicked, but it is art of a special kind, the patron's skill lying less in his artistic than in his psychological perception. Hence his dilemma.

There is a way out of a kind. Every merchant may

The art of showing off

display his wares – that is what he is for. It is the setting, the architectural packaging, not the goods, that is liable to be bogus, to become, with all the care in the world, only a spider's web for customer fly. If the setting, however, has a just and proper use, the dilemma is in part resolved. Clearly the carpet seller may hang his booth with carpets.

In this respect the firm of Thomas De La Rue & Co Ltd is fortunate. Of that firm's various products one at least may legitimately form a proper decorative part of the room in which it simultaneously has to be displayed and sold. This – the display of the product – and good planning are things we cannot complain of even in our most anti-commercial mood. In the new De La Rue showroom in Regent Street we have this combination of display and good planning.

De La Rue is fortunate, moreover, in having a tradition much older than this general commercial devaluation. It has been a tradition of elegance. The firm has a charter of William IV and was responsible for many of the finer early postage stamps and banknotes, as well as the famous playing cards. This led on to a consistent range of stationery and typography and, in fact, to what is known in these days as a house style – the stamp of artistic consistency upon everything De La Rue.

The problem in the creation of a house style is that normally everything *can* share a mutual style, but that normally everything doesn't because not everything is designed by one man. This consistency between things otherwise disparate – costumes and houses for instance – was one of those things that seem to have been inevitable in the great historic styles. The typographer

The showroom demonstrates practical and decorative uses of the large range of plastics laminates. On the far wall is an 'abstract' – reminiscent of a Ben Nicholson – designed by William Dixon, of De La Rue's own staff, showing in a series of rectangles (some slightly raised) many of the 'Formica' colours. Other laminates – plain, marbled and grained – are shown in the panels on the right.

Eric Marshall of De La Rue's Potterton division and William Dixon of the plastics division co-operated to produce this display kitchen, which reflects the growing influence of U S kitchen design in this country (DESIGN August pages 41-51). The hot plate, right, is separated from the ovens and grill, left; the covers on the hot plate conceal three recessed cooking vessels.

RIGHT The sink unit and window in the display kitchen. Post-formed 'Formica' has been used to provide a continuous connection between the working surface and the wall.

FAR RIGHT This corner view shows how the display area has been subdivided. For the model dining room, the firm's design studios have produced special 'Formica' panels incorporating woodcut designs by Thomas Bewick. Ernest Race designed the circular dining table with 'Formica' top.

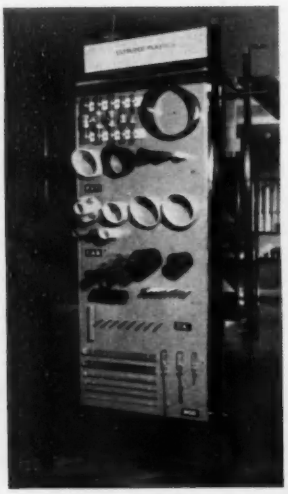
and the architect *can* be brought together but it is not normally, today, as easy as all that. With DRU as the firm's consultant designer, however, De La Rue, when creating both a new showroom and a new version of some of its products, found the right sort of organisation ready made. In Misha Black, Alexander Gibson and Philip Lucey they had architects; in Milner Gray and Ronald Armstrong they had typographers, and in Ronald Ingles a display artist. All these were already members of a single organisation, and to them were added Charles Munro, a free lance designer, and Eric Marshall and W. M. Dixon from De La Rue's own staff; Mr Dixon designed the arrangements of 'Formica' as wall decoration which are illustrated on page 36, and Mr Marshall designed the appliances for the display kitchen shown on this page.

De La Rue had hitherto occupied upper floor offices at 84 Regent Street. The firm has now acquired a small area of the ground floor and the entire basement. The temptation to use for display the one large window to the street has been wisely resisted. In so far as it is a display window at all, its main exhibit is an invitation to the basement in the form of a large and on the whole very elegant floating stair. The entrance hall from whence this stair descends uses the old trick – in this case an effective one – of a mirrored wall. This reflects the black, stainless steel and teak complexities of the stair, and seems justified in that by doubling that stair it adds a sense of spaciousness. It must be admitted that this is necessary. The upper flight – the one seen from the Regent Street pavement – is a little mean and narrow compared with its own fine materials and general lushness around it; the mirror mitigates this. In any case, when a stair alone is considered fit to be the

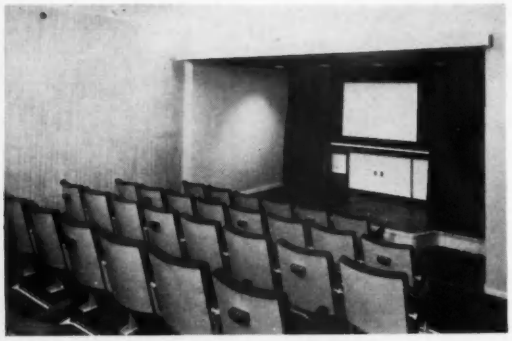
main item in a Regent Street window, then architecture is getting on. The only other display at street level is the use of 'Formica' as wall covering, with various examples of jointing and fixing. The total effect of the new coloured and marbled laminates as a background to the stair is excellent.

Externally the shopfront has been designed to allow maximum vision from street to basement showroom. It consists of a light bronze frame surrounding the plate glass. The frame to the doors is of stainless steel and the facia is black Belgium marble. The name of the firm on the facia is in a modified Gothic script; this is repeated in an elaborated and more decorative form in the illuminated sign, and also sandblasted into the window. The door handles are cast in stainless steel with oval ceramic insets, designed by Milner Gray and produced by Josiah Wedgwood & Sons Ltd, showing the silhouette of the founder, Thomas de la Rue, in low relief against a Wedgwood blue background.

DRU designed this small cinema which adjoins the showroom.



One of the free-standing display frames to show the products of the plastics division.



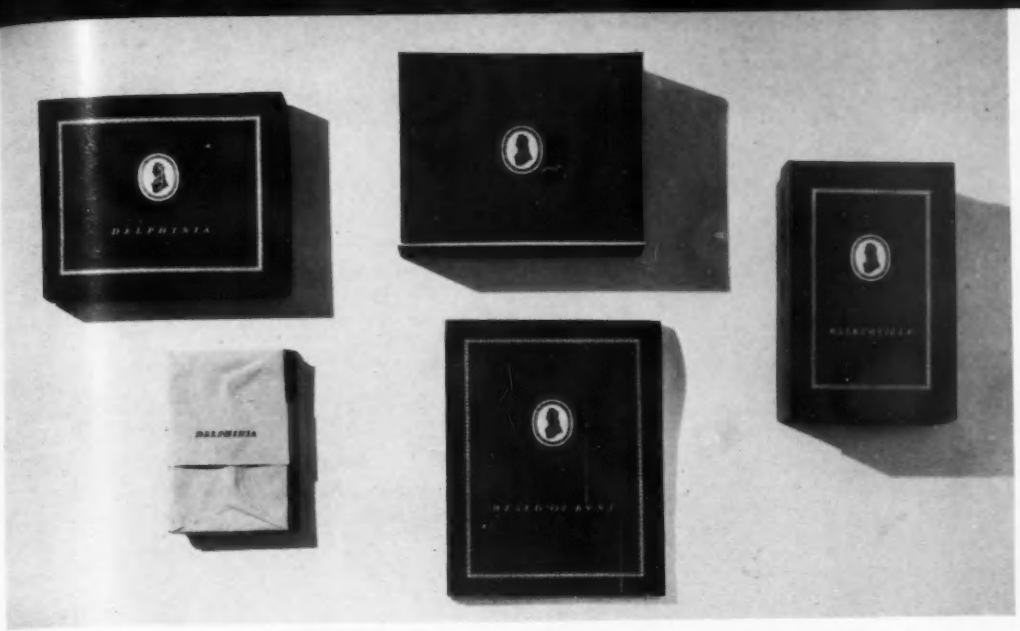
The stair from the Regent Street entrance to the basement showroom is in prestressed concrete with teak treads and stainless steel balusters.

As the stair descends to the basement showroom it doubles its width. This is not very logical; the traditional stair in the grand manner does, of course, do the same thing, but then it always has two upper narrow flights to one wide lower one. This may explain the slightly mean effect of the upper flight. The basement itself presented the architects with a problem, being, like most such London show basements, too low relatively to its area. This problem has been well solved. Varying floor and ceiling levels and subdivision of the general area by showcases, etc, does both decrease the rather excessive floor area and give relative height to the main portion of it. The only point of criticism is the floor itself – a rather ordinary woodblock compared with the richly treated walls.

The subdivision of the basement by screens and showcases has the advantage of giving enclosures of suitable scale, size and detail for the display of the smaller products such as stationery, playing cards, 'Onoto' pens and the well designed boilers and cookers from the firm's Potterton division. The plastics and Potterton divisions have also combined to forecast a model kitchen with an adjoining dining area. This has an interesting dining table specially designed for the firm by Ernest Race – 'Formica' top with brass trim. There is also an admirably designed little theatre for showing 35 mm and 16 mm films; it seats 45 people.

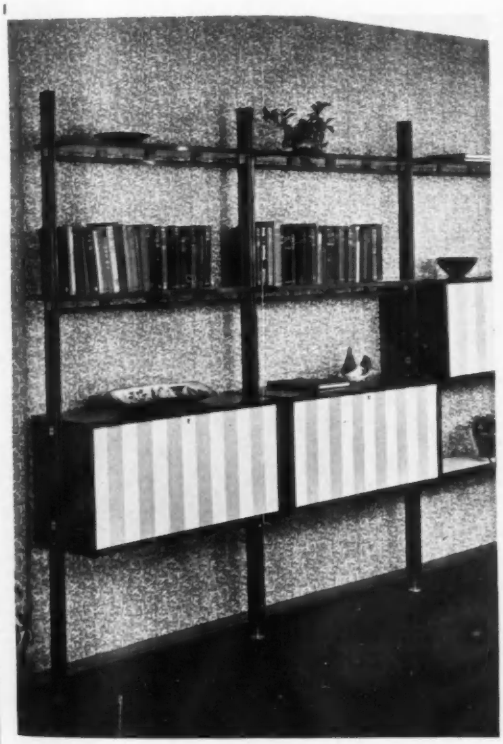
Apart from these subdivisions – kitchen, stationery, theatre, etc – the main showroom is in itself a demonstration of the products of the plastics division – 'Formica', 'Delaron' and extruded products. Many people will be surprised at the enormous range of colours and patterns, and will admit the technical excellence even of those which, rather dubiously, imitate wood or marble. A great colour wheel shows how the colours are keyed to each other – this wheel being a fascinating object in itself. The main feature of the showroom, however, is the treatment of one of the big walls. This has been brilliantly designed by Mr Dixon. It might be described as a giant early Ben Nicholson. The rectangles of colour show some of the subtleties as well as contrasts of the 'Formica' range; the juxtaposition of the panel edges, and the almost imperceptible raising of some above others, shows the importance of one thirty-second of an inch in this kind of design.

Generally it may be said that this new Regent Street showroom has been most skilfully handled by the team of architects and designers. It is without that commercial pretension which runs from end to end of the street; it even achieves a certain elegant sophistication.



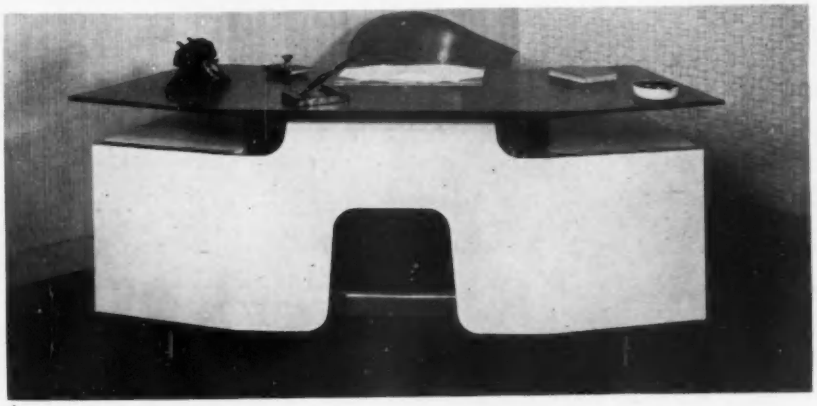
Milner Gray and Ronald Armstrong of DRU have designed this new range of retail stationery for De La Rue; the silhouette of the founder, Thomas de la Rue, RIGHT, in ceramic and cut out forms, was designed by Milner Gray as a house symbol for the firm.

1



2

3



4

Experiment in furniture

To convince manufacturers and the public that the use of plastics laminates need not be confined to the kitchen, Thomas De La Rue & Co Ltd invited several designers to produce pieces of furniture incorporating 'Formica'. It was left to the designers themselves to choose the type of furniture they would make and the colour and pattern of the laminates they would use.

Some of the new designs which resulted from this commission are illustrated here. Most of the designers have exploited this opportunity to produce furniture that is colourful and lively in design. The furniture is not in general production, but the success of many of these designs should encourage furniture manufacturers to make a wider use of plastics laminates. 1 Wall storage fitment. DESIGNER *Clive Latimer*. MAKER *G. W. Evans Ltd.* 2 Kitchen table. DESIGNER *Dennis Young*. MAKER *Derek Goreham*. 3 Writing and dressing table unit designed for use in hotels. DESIGNERS *John and Sylvia Reid*. MAKER *Davis Fabrication Co. Metalwork by A. Arden & Co Ltd.* 4 Executive desk. DESIGNER *Ronald Ingles*. MAKER *Frank W. Clifford Ltd.*

Decoration in glass laminates

These panels, shown here at a recent exhibition, exploit the use of silk screen printed opaque patterns on glass backed with coloured glass gauzes. Patterns may also be formed solely of gauzes.

GEOFFREY SALMON

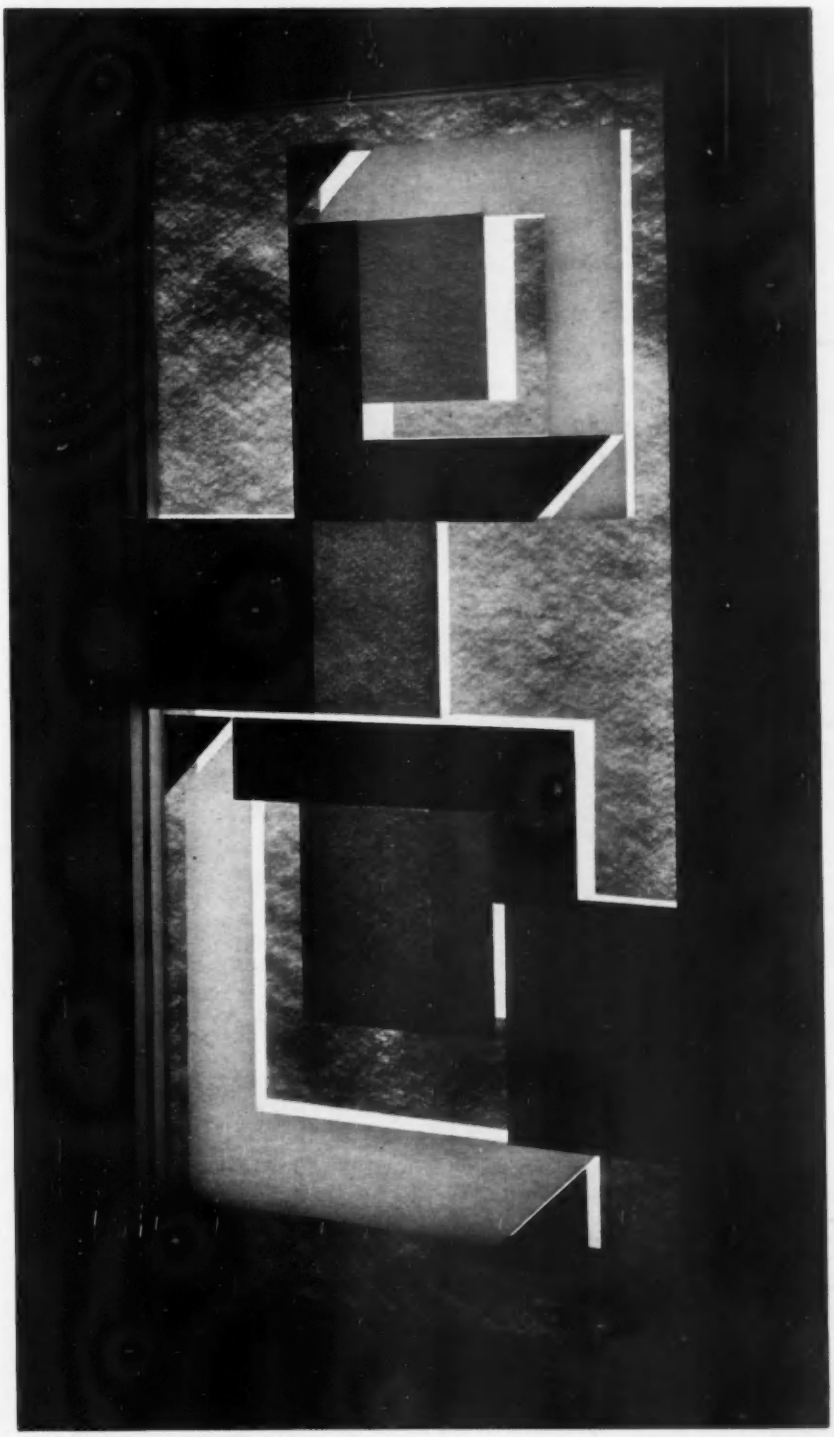
THE FUNDAMENTALLY SIMPLE IDEA of bonding several layers of glass fibre gauze in different colours and patterns to a sheet of glass introduces a new and exciting visual medium to the field of architecture and interior design. Over the past eight years, Plyglass Ltd of Harlow has developed this idea as an extension of its original technique of laminating various combinations of glass, glass fibre and other materials together to form decorative insulated panels. A recent exhibition of designs by Cecil Stephenson and Edward Curtis demonstrated the potentialities of this medium.

The most common use of glass fibre is for insulation, but when it is produced as a very thin gauze many other valuable qualities become apparent. It can easily be cut with scissors, and patterns of the material are simple to make. It is translucent; yet by building up several layers, varying degrees of translucency can be obtained in very little thickness. It may be coloured with permanent pigments of any hue. Finally it can be bonded inseparably to glass and by so doing the glass is rendered shatterproof. A laminated glass panel combining all these characteristics is obviously of value.

By varying the shapes and colours of several gauze overlays in the same panel, silhouettes of different tones and opacities are possible. The nature of the gauze permits a fluidity of pattern and an overlapping of

RIGHT Glass fibre patterns, which are cut as required, being bonded on to a glass sheet. The method is alternative or supplementary to silk screen printing on to the inside face of the glass before bonding.

BELOW RIGHT Several laminated glass panels placed parallel, with light coming from behind. The clear glass in each panel helps to produce a pattern in three dimensions. This design is by Cecil Stephenson.



colour combined with translucency which can rival stained glass in its quality of light and pattern. By printing designs by silk screen on the inside face of the glass before laminating, intricate opaque patterns are produced against the background of the fibre gauze. A further variation is the use of several laminated panels placed parallel to each other several inches apart. With a light behind and a good deal of clear glass left in each panel the sense of depth which can be achieved is remarkable. Exploited to the full these qualities could capture the geometric imagery of a Ben Nicholson or the dream like nuances of a Paul Klee in three dimensional form.

For interiors and exhibition design, decorated glass laminates introduce a fresh reinforcement to the overworked company of louvred blinds, slatted screens, indoor plants, plate glass tables and the rest. It is to be hoped that the enormous number of variations possible in colour, pattern and depth will relieve the more stereotyped clichés of exhibition design and raise the standard of the under-developed art of surface pattern-making. For light diffusing screens, illuminated ceilings, display backgrounds, tables, signs, three dimensional flow charts and a host of other fittings, glass laminates can offer a diversity of means to the bright designer.

To architecture, decorated glass laminates bring the potentialities of applied decoration to the now established technique of glass curtain walling. Unhappily, it is easy to imagine how the application of one motif or pattern over a large area in a 'wallpaper' technique, might destroy visually any inherent structural dignity which the curtain wall possesses. On the other hand these decorated panels could do a great deal to enliven the more arid examples of curtain walling (particularly the standard types) which produce buildings lacking both in spirit and identity. The smooth face of a glass clad building can now be conceived as a gigantic mural with artists commissioned to design it on a scale appropriate to modern architecture.

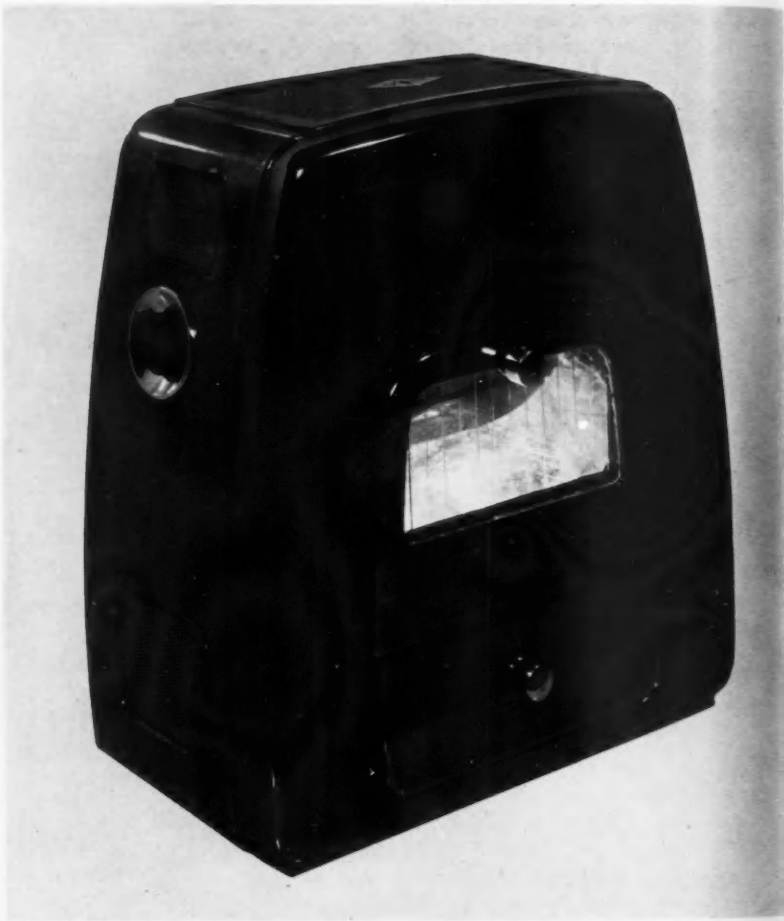
Here then is one of those exceptional developments which enable a traditional material to be used in new ways. Practically, it offers one of the few opportunities for a designer to create original pattern and have it transferred in the factory simply and accurately to a durable material at reasonable cost. Aesthetically, it enables the smooth intractability of glass to be visually softened by controlling the amount of light which filters through it. Used with imagination and verve, these virtues could bring added personality to decoration in architecture, interiors and display.

Review of current design

A selection of items recently accepted for inclusion in 'Design Review', the CoID's photographic and sample record of current well designed British goods. 'Design Review' forms an essential part of The Design Centre, 28 Haymarket, SW1, which is open on weekdays from 9.30 am – 5.30 pm.

All retail prices quoted
are approximate and include purchase tax where applicable

1



1 Solid fuel heater in cast iron, sheet and expanded metal with heat resistant glass panel, thermostatic control and built in fuel storage hopper. Vitreous enamel or nickel plate finish, in bronze lustre, black or dull nickel and other colours. MAKER *Smith & Wellstood Ltd.* *£30 13s 6d (standard finish)* *£32 16s 7d in other colours.*

2

2 Easy chair in yew and beech, with natural finish. Upholstered in 'Latex' cushions covered with wool tapestry. MAKER *Parker-Knoll Ltd.* *£34 15s.*

3

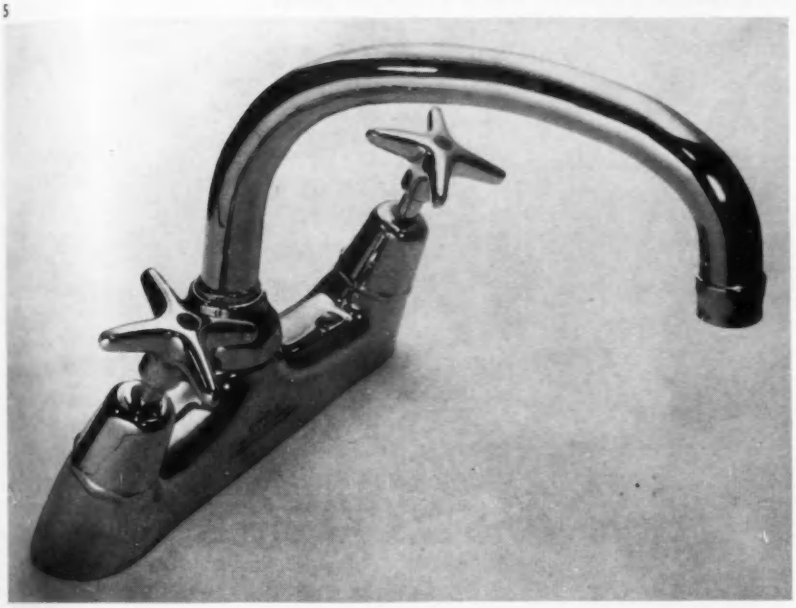
3 Tableware in English bone china. Available as coffee set or coffee cups and saucers only. DESIGNER *R. Brockman.* MAKER *R. H. & S. L. Plant Ltd.* *£5 3s 6d (set), £5 6s 5d (dozen cups and saucers).*

4

4 Stewpans in cast iron and sheet metal with wooden handles and knobs. Acid resisting vitreous enamel finish in blue, green and cream or grey mottle with black covers, or matching covers in green and blue only. Available in two and four pint sizes. MAKER *Izons & Co Ltd. Two pint £1 2s 3d (black cover), £1 3s 9d (matching cover); four pint £1 8s (black cover), £1 10s (matching cover).*

5 Sink fitting in brass with chromium plating on heavy nickel coating. MAKER *Barking Brassware Co Ltd. Price from maker.*

5



6

7

8

9

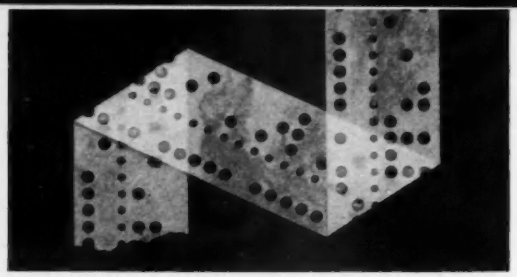
6 Kitchen cutlery with stainless steel blades and chemically treated natural hardwood handles. MAKER *Prestige Group Ltd. From 5s 6d – 10s 6d.*

7 Shopping bag in coach hide. Available in various colours including golden tan, nigger, red, blue, black, and white. DESIGNER *Edwin A. Ling.* MAKER *R. Ling & Son. £3 12s.*

8 Stemmed drinking glasses. In current production for hotel and catering trade only, and for export. DESIGNER *A. H. Williamson.* MAKER *The United Glass Bottle Manufacturers Ltd. Prices from maker.*

9 Boy's chamber in urea formaldehyde. Available in pink, blue or white. DESIGNER *Eric Doudney.* MAKER *Halex Division of British Xylonite Co Ltd. 9s 11d.*

DESIGN 105



Automation and design 3

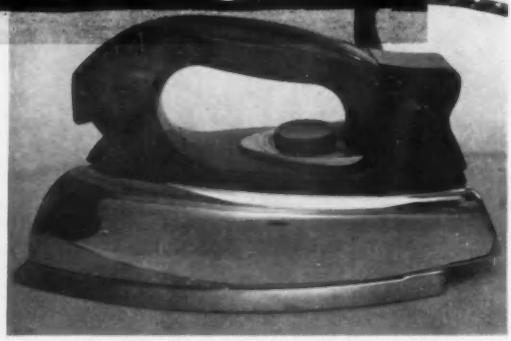
J. CHRISTOPHER JONES Metropolitan-Vickers Electrical Co Ltd

The products

It is probable that the automatic production of domestic goods will entail great changes in the methods of design and distribution. As rental replaces selling, eye-catching design for the moment of purchase can be replaced by inconspicuous design that demands the minimum attention during a long period of service. At that stage intuitive design methods should be strictly conditioned by logical analysis of consumer needs.

1 *Byron typewriter*

2 *Ford 'Victoria'*



3 *Morphy-Richards iron*

1, 2 *and* **3** Mechanised processes do not appear to restrict the complexity of shapes that can be economically manufactured. Each of these is produced on a semi-automatic production line.

IN THE PREVIOUS ARTICLE of this series it was suggest that automation is not leading us towards more un formity in design but that it may, in the end, mak possible much more diverse and subtle product var ations than we have at the moment. Such variability i design may be matched by an ability to make the mo complicated shapes, for there is little to suggest th automation will restrict in any new way the shape that can be easily manufactured. The mechanised an semi-automatic processes which are already used t make such things as typewriters, motor car bodies an electric irons evidently do not prevent the productio of forms of great complexity, **1**, **2** and **3**.

Automation does not alter the character of the familiar techniques but greatly increases the pace o production. Where automation is complete, and whe human control and operation are dispensed with, th production line can only work at maximum speed an it must continue at that speed without any interruptio The vast amount of money that is lost while such process is stopped can never be recovered, because it impossible to catch up on lost time with a continuou single speed process. This relentless pace calls fo great changes in the ways in which products a designed and distributed; because of this it indirect influences the shapes of products also.

An automatic production line will be no place fo experiments, mistakes or any kind of *unpredictab* change, although all manner of *predictable* variations design may become possible. This means that th methods used to match the quantities and qualities o products to variations in the demands and require ments of users must become much more certain an exact.

At the present time disparities between the quantiti

was suggested
rds more uni-
the end, make
product vari-
h variability in
make the most
o suggest that
ay the shapes
echanised and
ready used to
car bodies and
the production

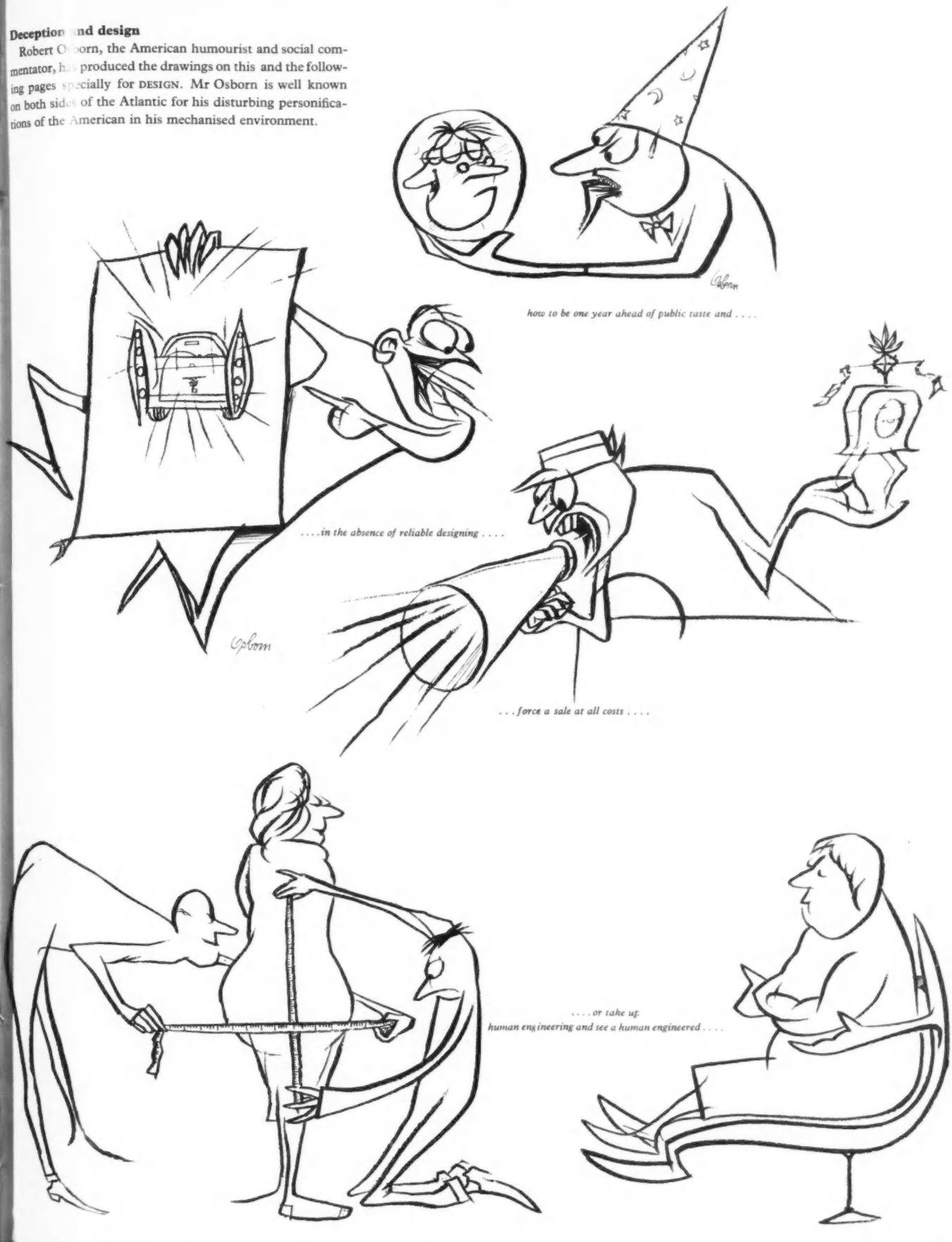
acter of these
es the pace of
lete, and where
nsed with, the
num speed and
y interruption,
t while such a
ed, because it is
h a continuous,
pace calls for
products are
his it indirectly

e no place for
of *unpredictable*
ble variations in
means that the
and qualities of
ls and require-
ore certain and

en the quantities

Deception and design

Robert Osborn, the American humourist and social commentator, has produced the drawings on this and the following pages specially for DESIGN. Mr Osborn is well known on both sides of the Atlantic for his disturbing personifications of the American in his mechanised environment.



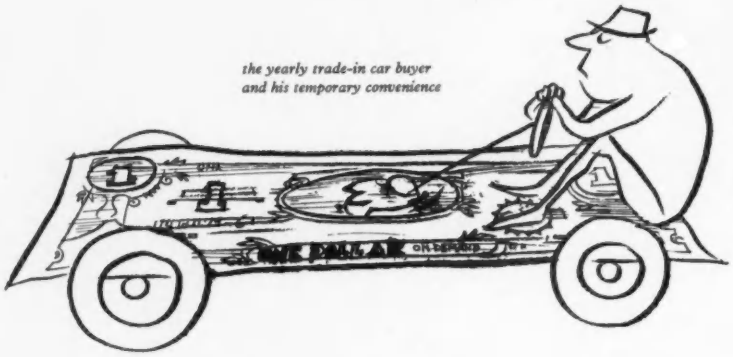
how to be one year ahead of public taste and . . . .

. . . . in the absence of reliable designing . . . .

. . . force a sale at all costs . . . .

. . . . or take up human engineering and see a human engineered . . . .

produced and those demanded are minimised by the techniques of salesmanship, and the qualities of manufactured goods are related to the needs of users by largely intuitive and commercially oriented design methods. The inadequacies of the present methods of designing and selling (so often the subject of comment in this magazine and perhaps the reason for its existence) are hardly to be tolerated even with the semi-automatic production methods that now exist. Already there are signs that the relentlessness, precision, stability and orderliness of automatic production are imposing themselves on design and selling methods to such a degree that they change their nature. Selling is



the yearly trade-in car buyer and his temporary convenience

replaced by rental, marketing by service-marketing, market research by user research, styling by ergonomics, and intuitive design methods by logical analysis.

The extent of some of these changes is indicated in the following quotations from the American magazine 'Industrial Design',* in which the predictions of the economist Peter Drucker are discussed: "Among Drucker's implications, the most stimulating is the switch from product-marketing to service-marketing. Bizarre as it sounds, the idea of renting products on a service contract is not new. The biggest corporations in the world – IBM and the Bell System – sell a good deal of service. Their success indicates the reason for a similar approach under automation: by assuring production to an exactly calculated demand, service-marketing prevents economic suicide. It is also not far from today's habits of trade – instalment buying, for instance. Levittown residents don't own their monthly-payment houses for some 10 years, at which point ownership is more of a bonus than an achievement. The yearly trade-in car buyer has no intention of owning anything except a temporary convenience, which he knows is negotiable for the new models which will be along in a year."

Since this was written the distribution of domestic food supplies by a service contract for six months or a year, with a deep-freeze supplied by the contractor, has begun in America. In this country we have the newly introduced television service contract, 4, under which the user gets a new set every 12 months and full servicing.

" . . . How will business compete for the rental customer's affections? It may, first of all, exaggerate the use of artificial lures, such as colour and trim. But at the same time, it may find that genuine product innovation will be more acceptable than ever before . . . Rental competition will also involve new values: better quality and performance, and less servicing. For industry, even more than today, will be designing for itself as much as for the customer. There will be little advantage in building a machine which is calcu-

total collapse and complaint

lated to collapse after a brief but brilliant career. If quality is low, the manufacturer will lose profit-time on his second-string rentals. If servicing costs are low the money he saves will be his own."

It will be noticed that this American prophet emphasises the way in which the more exact method

* 'Industrial Design', No. 4 August 1955.

4 It is likely that the need for a more predictable market for automatically produced goods will lead to a complete change in the methods of distribution. Selling will be replaced by rental and service-marketing. Already this is happening with television sets.

4

WOULD YOU LIKE A NEW TELEVISION SET EVERY JUNE?

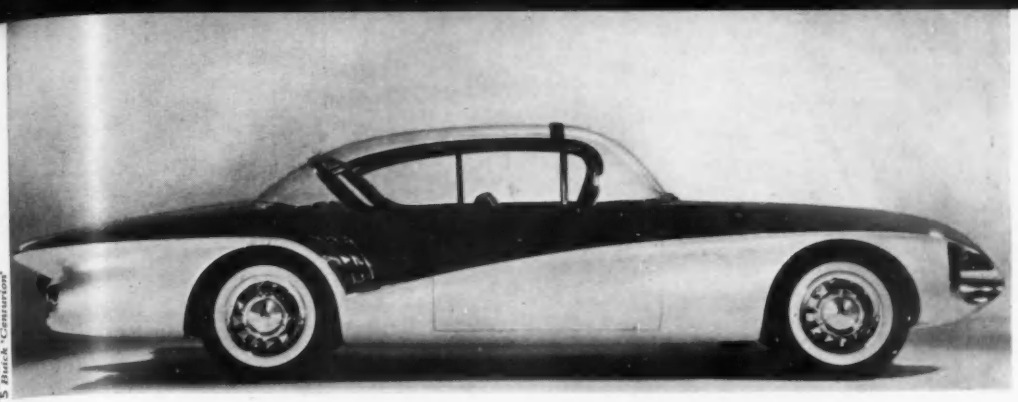
The introduction of the *Premium Viewing Service* for the first time in this country makes this offer possible. It is specially designed to provide the more discerning person with a new television set every year. It is the most economical, permanent method of enjoying television with the absolute minimum of fuss and bother, and also of keeping right up to date with the latest developments.

On payment of an annual subscription the latest model is installed (with aerial, of course) and is fully maintained and serviced throughout the following 12 months. At the end of this period your set will be replaced by the latest model at that time.

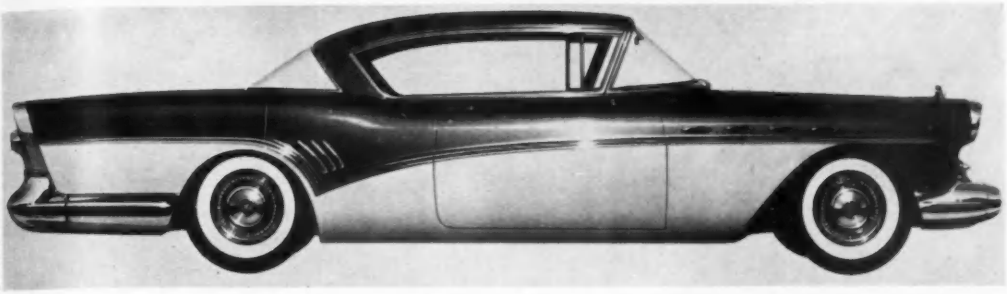
The highly specialised maintenance service (which includes replacement of tubes and valves) is operated by the extensive organisation of D.E.R. Ltd., who have been television specialists for 20 years.

We shall be pleased to send you full details of this

Press advertisement for Premium Viewing Service



5 Buick 'Centurion'



6 Buick 'Riviera'

5 and 6 The dream car, **5**, is used to create a predictable demand for a new design, **6**, before it goes into production. It is characteristic of automation, and also of the semi-automatic processes of a car factory, that a means must be found of absorbing a fixed output because production cannot be interrupted without great cost and confusion. In this case functionally irrelevant but psychologically attractive form is used in the absence of any reliable methods of discovering users' requirements.

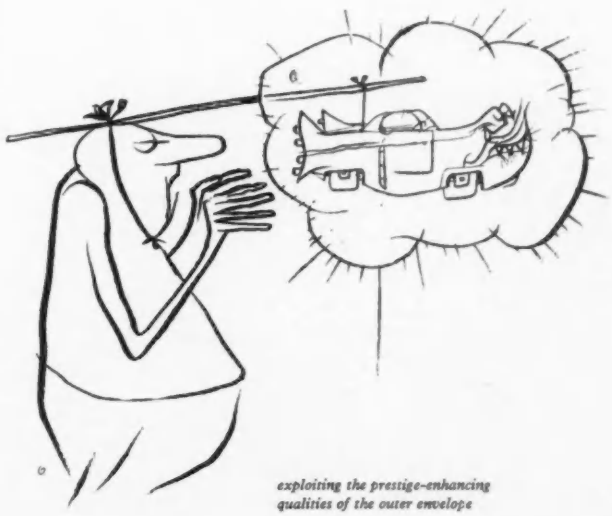
of the future – and of automation – are growing out of the present commercial practices. But to obtain a clear idea of the qualities and effects of automation it is more helpful to emphasise the differences and treat them separately.

Present methods

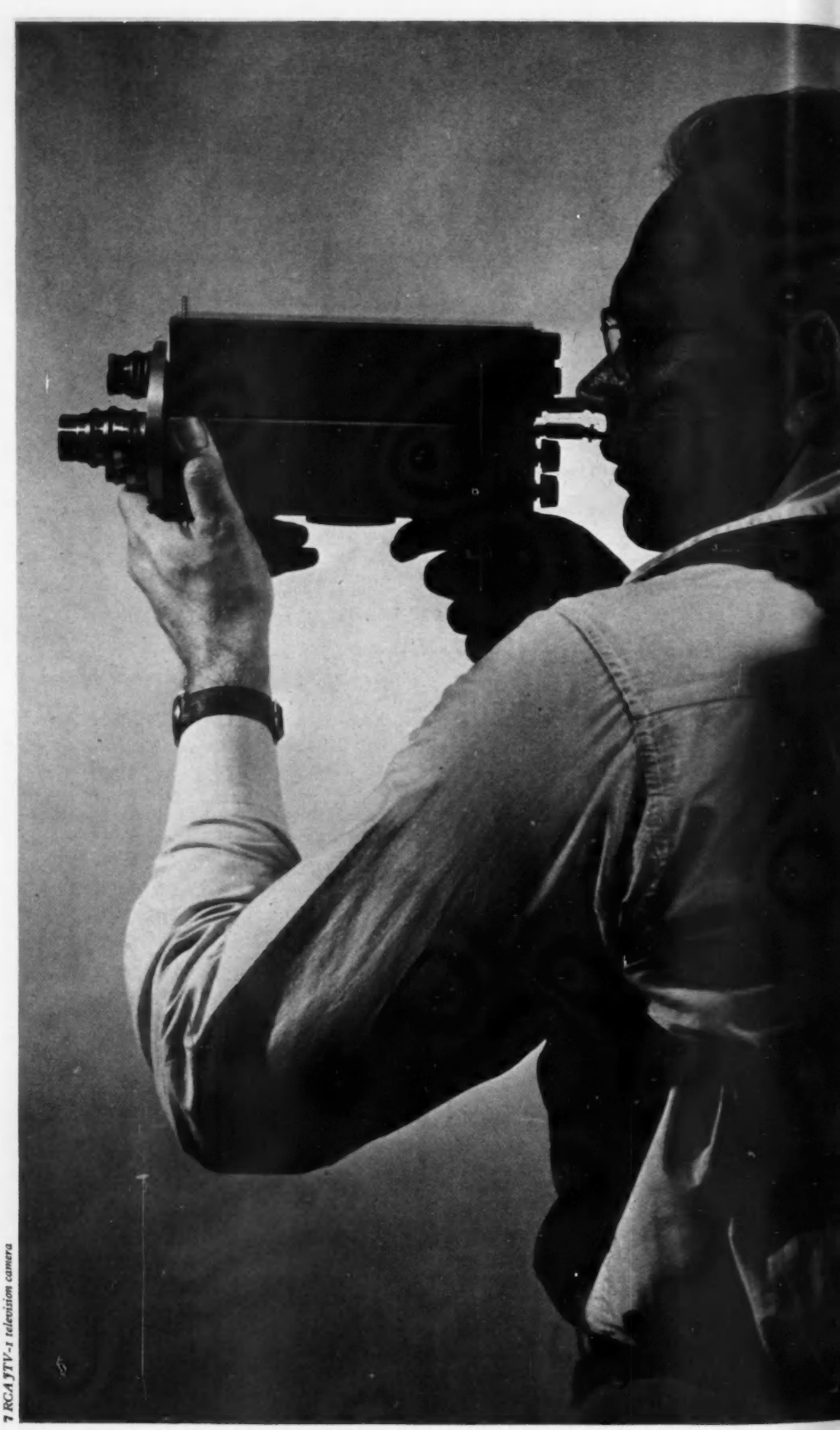
The present method of maintaining a sufficiently predictable market for the semi-automatic processes that now exist, is by the forcing of demand by advertising, styling and design for obsolescence. This process has already reached an advanced stage in American society and in our own. The efforts of the American car makers to impose some uniformity and predictability upon the demand for private vehicles has culminated in the use of the dream car, **5**. By exploiting and exaggerating the symbolic and prestige enhancing qualities of the outer envelope, the dream car creates a fairly certain demand for a new design before production begins, and at the same time restricts the demand for technical changes, especially those that threaten to outmode any part of the production plant. Styling used in this way, is a means of making up for the absence of any reliable methods of discovering and predicting the actual requirements of users by forcing them all to want and accept an irrelevant but psychologically attractive form. The industrial designer is valued for his ability to carry out this process. Like the advertising man, he translates into visual form the aspirations, weaknesses, fears and desires that prevail most widely in our society, and so makes possible the sale of products which may not be particularly well matched to the consumer's needs, but offer him a symbol or a substitute for some state of mind the lack of which he deeply feels.

Automation methods

As fully automatic production is more nearly approached all aspects of both selling and design change together and become more exact. When production is based on rental instead of sales, the demand becomes far more predictable and stable of its own accord. The manufacturer can plan further in advance and reduce his costs. The product remains his property and he will lose money rather than gain it if frequent servicing or



exploiting the prestige-enhancing qualities of the outer envelope



7 RCA TV-1 television camera

replacements are required. The pressure to design for obsolescence is replaced by a vested interest in long life and reliability. The product will be of high quality and designed to give the customer the minimum trouble and the least incentive to change his supplier. Eye-catching design for the moment of purchase is replaced by inconspicuous design that will demand the minimum attention during a long period of service.

This trend towards design that creates the least trouble for the user is exemplified in the pocket size television camera, **7**. Although so much smaller than conventional types it has automatic focusing and setting circuits that allow its use by the intelligent but technically uninitiated user. Unlike most film cameras, but like the human eye, its use does not distract the user's attention from the image which it is its purpose to record.

The more intimate relation between the supplier of rented products and the user encourages and assists the discovery of the user's real needs. Salesmanship is replaced by the much more exact and exhaustive process of consumer research. This change will be reflected in the replacement of styling by ergonomic design.

It is possible that as the products of such a system will not need the addition of eye-catching exteriors to ensure their distribution they will be less exciting to look at. The artistic effort that is now expended on styling, and on graphic design for advertising too, may no longer be applied to products and their distribution, but will tend more and more to be directed to purely decorative and symbolic objects. Then the rational and orderly forms of rented products would contrast with quite separate forms of personal and perhaps more irrational display. Such is the contrast between the flower and the leaves of a plant.

The telephone, once again, is a perfect example, **8**. We see that, alone among the domestic appliances with

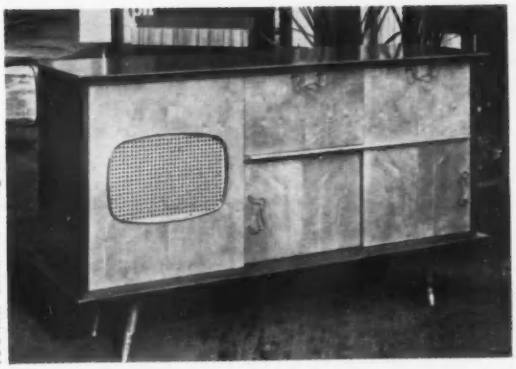
7 The small size, simplicity of operation and adaptability of this miniature TV camera allow it to be used by non-technical persons. It adjusts automatically to a wide range of lighting conditions, uses little power, has great resistance to rough handling and rarely needs readjustment. In these characteristics it foreshadows a typical automation product that will perform well and adapt easily to the requirements of the user.

8 *and* **9** The telephone, as well as typifying the input/output devices of automation, may be characteristic of its products. The significant characteristics are; absence of styling, rented as part of a service but not sold to the user, standardised design based on studies of user requirements. The telephone handset and the hair drier, **9**, show the difference between the natural biotechnic style that arises from an ergonomic approach and an assumed aerodynamic style.

10 *and* **11** Although of similar purpose to the telephone, the radio has never developed such a characteristic shape and it has appeared in forms borrowed from furniture **10**, or science fiction, **11**. If, as is predicted, the products of automation will be rented like the telephone, but not sold like the radio, manufacturers will be designing as much for themselves as for their customers. In this case there is little need for superficial sales appeal and there arises a real impetus to keep down complaints and servicing costs by designing for reliability and long life.

8 *Standard GPO telephone*

9 *Pifco hairdryer*



10 *Philco 'Richmond' radiogram*

11 *KB 'Rhapsody' portable radio*

DESIGN 106

which we are familiar, it is always rented to the user as part of the service that he buys, but it is not his property. This seems to be true in all countries where telephones exist. The shape of the instrument conforms very well to our predictions because it shares little of the styling and none of the artificial obsolescence of the other domestic appliances. It is seldom redesigned. It is unique in having a hint of the biotechnic look that comes of ergonomic design. Unlike the commercially styled radio or television it does not pretend to be a piece of furniture, **10**, and neither does it have the science fiction look, **11**. In fact, the telephone does not seem out of place in any room and is one of the few articles that the sufferers from the neurosis of design-consciousness can look at without ill effects.

The exhaustive and painstaking way in which the style of the American telephone was determined is referred to in Henry Dreyfuss's recent book 'Designing for People'*. The change from arbitrary design methods, hunches, guesswork and intuition to a more systematic and deliberate process of research and testing is the means by which the pre-production stage of manufacture can be made sufficiently reliable for automation. As was made clear in the series of articles by L. Bruce Archer on 'Design and Stress Analysis'**, the stage is set for the adoption of analytical techniques in product design. The recent emergence of ergonomics, consumer research, motivation research, method

the biotechnic look

study and many forms of statistical analysis, foreshadow such a change. But it is also clear that exhaustive and logical design methods are not often used at the moment, even in engineering. This is because they are relatively costly in time and tend to involve a tremendous amount of research and analysis to fix the simplest of variables.

* Reviewed in DESIGN May 1956 page 71.
** DESIGN June, July, September, December 1956, and May 1957.

At the moment the less exact but much quicker and cheaper methods of relying on informed intuition are often acceptable and anything more is usually considered to be a waste of time and money. But when automation is complete, such methods will not suffice and the full rigour of analytical design will be forced upon the designers. Such methods will then become acceptable because the economics of automation allow a more generous budget for pre-production research.

It is characteristic of automation that it provides its own answer to this problem. The digital computer, **12**, which is the most important of the information handling devices that make automation possible, can be used to shorten and cheapen analytical methods so that they become a practical possibility. Used in this way the computer enables the designer to initiate and carry out the most arduous and protracted analysis of design problems, without resort to guesswork and without the tremendous labour of doing the counting and calculating involved in such an analysis.

Logical design methods

Not only can the computer be used for analysis of data, it can be used by the designer to try out and predict the consequences of using any of a large number of possible designs, so that the correct shape can be discovered with certainty. It is already possible to see how this might be done in a relatively simple case such as the determination of the effects of varying patterns and positions of glazed and opaque areas in a curtain wall on the light and heat distribution inside. A computer could be programmed to work painstakingly through the countless possibilities until the optimum design was discovered. There seems to be no theoretical reason why such a procedure – the replacement of informed but intuitive designing by logical analysis – cannot be extended to any design problem of any three dimensional complexity, so that design, with the limits of an automatically manufactured and assembled system of unit construction, would become automatic itself.

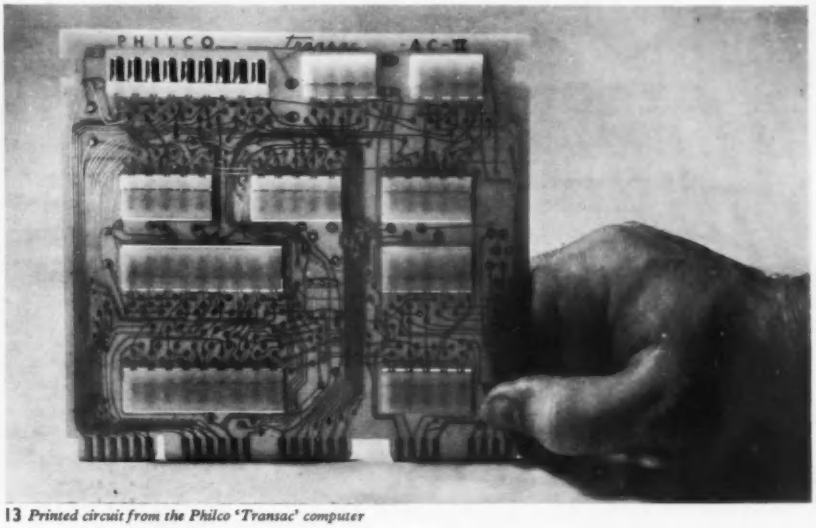
This does not mean that the things being designed would become less varied and more stereotyped; it does mean that designing would have become sufficiently fast and reliable and exact a process to translate human requirements into the shapes that most naturally and correctly fulfil them, at a far greater speed and certainty than can be undertaken at present. Instead of products that only approximately meet our most easily discoverable needs we might have products that were exactly matched to our most diverse and subtle requirements.

But, before logical design methods can be widely used and before computers can be exploited in this way, there must be accumulated a much greater and more detailed knowledge of the relationships between all the factors involved in any design problem, and a comparable increase in the availability and capacity of computing machines and programming techniques. These can happen only after much more research and greater reductions in the cost of computer parts. The possibility of much smaller and cheaper computers is

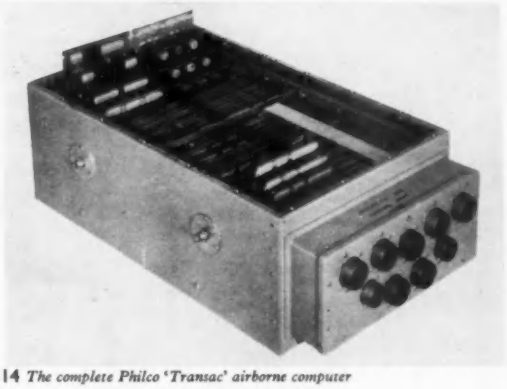
hinted at in the miniature computer for aircraft use, 13 and 14.

Such changes as these may not appear for a long time, but when they do we may find that design and industry will both have lost the interest that springs from their present imperfections and will revert to more subsidiary positions. The design and production of goods may have become as automatic and as uninteresting as is our present water supply. By then we may expect some other and less materialistic ideas of the purpose of life to have taken a hold of people's minds and to have become the objects of their chief endeavours. And these also will be reflected in new forms and shapes far beyond our own dreaming. Generally, one feels that the stability and orderliness which seem to underlie every aspect of automatic production will never, by their nature, lead us on and on to the ultimate pointlessness of a continually expanding economy and perpetually rising material standards. It seems much more likely that there is a final state of complete automation that will be reached when the things that now change become more stable and more normal.

12 *'Metrovick 950' digital computer*



13 *Printed circuit from the Philco 'Transac' computer*



14 *The complete Philco 'Transac' airborne computer*

12, 13 *and* 14 As automatic production cannot be attempted except at great cost and inconvenience it is necessary to use elaborate analytical methods of design to make certain that the shape is correct. Design research is much more costly and slow than designing by eye and informed guesswork that suffices at the moment. The digital computer 12, can be used to shorten and cheapen analytical techniques so that they become a practical possibility. The widespread use of computers in design will have to await the development of much smaller and cheaper computers. The possibilities of these are hinted at by the use of printed circuits and transistors in 12, 13 *and* 14, and by such a small computer as 13 *and* 14.

In DESIGN for December **'Work and leisure'**, the fourth article in the series, will show that perhaps the most obvious effect of automatic production is to alter our habits of work and leisure. There is little place for the routine brain worker in the automatic factory and we may find that most of the thinking that keeps the system in operation gets done at irregular times between the non-industrial activities of domestic life. The input/output devices make it unnecessary to go to the office; they could make the house a work place once again, after centuries of being a residence and latterly only a dormitory. It is suggested that the home might become again a centre of some kind of creative, craft-based pursuits. The manual aspect of work, fundamental to a mechanised system, is dispensed with under automation, and could be redirected into domestic activities. This is already happening, at an incipient stage, in the 'Do-it-yourself' movement.

DESIGN ANALYSIS 5

J. BERESFORD-EVANS and L. BRUCE ARCHER

Free-standing fire

DESIGNER *Frank Watkins*
MAKER *Lane & Girvan Ltd*
£17–£24 according to finish

The 'Caloray' free-standing open fire has been chosen as the subject for the fifth article in this series as its appearance is a radical departure from similar appliances available on the market. The design, originally executed by Frank Watkins while a student at the Royal College of Art, was a prize winning entry in the 1953 *Bursary competition organised by the Royal Society of Arts, and was illustrated in* DESIGN *for March,* 1954. *The judges commended Mr Watkins for considering "intelligently the important question of the appearance of his fire in both traditional and contemporary settings". Although the appearance of the production version follows closely that of the original design, considerable development work was carried out by the designer and manufacturer before launching the 'Caloray' on the market. Although equipment necessary for accurate assessments of efficiency was not available for the purpose of this article, the authors have based their remarks on simple tests carried out in the home. The manufacturer's comments are included at the end of the article. An exhibition of solid fuel appliances, including a number of free-standing fires, is currently on show at The Design Centre until October* 26.

The use of stilt legs on the 'Caloray' reveals a concession to fashion in design that is inappropriate on an appliance of this kind. The suggestion that the fire can swivel on a central pivot is clearly misleading. In appearance the fire has changed little from the original design by Frank Watkins, ABOVE.

WE LIVE in a particularly difficult period, between the days of ample coal, made easy to use because of cheap labour, and an anticipated age of comfort and warmth in the house through the use of nuclear energy. Meanwhile we have complicated the transition stage by requiring high levels of comfort and cleanliness from a fuel economy that is highly stressed.

Quite rightly this need for economy attracts attention in the first place to the most economic production of heat; but a house is more than a *machine à habiter*, and a fire is more than a heating appliance. It is necessary to measure carefully the efficiency of an appliance, both for comparative assessment and to show up the weak points that need further tuning or development. It is also necessary to know the physical characteristics of houses as the performance of a fire will vary under different working conditions. But these things do not much interest the family in the home, who will measure the value of a fire empirically, qualitatively and emotionally. A fire is good in so far as it makes you feel good – warm, sociable, active, and superior to the temporal climate – and provides a live focus in the room.

If we examine these sensations in detail we have a set of requirements, as valid to the user as basic thermal efficiency figures, but awkward to assess because of the difficulty of measuring composite sensations. We need to add together such things as stuffiness, caused by stale air, fuel gases, lack of air movement, and air stratification; and draught, caused by an excess of air change, usually at low level and low temperature; and at the same time we must consider the proportion of radiant heat to convected heat, and to the equivalent heat which is returned to the person's body in compensation for his loss by radiation. Complicated sets of variables like these are measurable for any particular installation, but there remain the very important subjective sensations, comprising social and aesthetic factors, that are not susceptible of physical measurement. A fire takes the prime place in a living room, for it usually sits in the middle of the main wall, set off by the chimney breast and a mantel or surround. It is a large mechanical product, distinct from the furniture-like radio or television sets, and the only appliance of this kind. Furthermore, it is almost endowed with life, in that it needs feeding and tending, in return for which it moves, flickers and changes mood, giving a reward that is not altogether automatic but reflects the attention it has received. Less definable, but equally important for most people, is the almost mystical, atavistic association of live coals with security and the family entity. Thus a fire can never be judged by the same standards that we would apply to any other appliance. In discussing the design of the new 'Caloray' fire we have attempted to bear in mind these varied and complex requirements.

'Caloray' in the home

The new 'Caloray' fire is easy to lay and lights well. There is no provision for a gas poker, but gas ignition can be built in. It holds about eight lb of coke, which is quite a large quantity, and the chance of spilling fuel is

negligible, either when loading or cleaning. No riddling or dumping mechanism is provided, so that stones in the fuel need to be removed by hand from a dead grate. Ash removal is by a conventional pan that could be of larger capacity.

Testing with different fuels

All the fuels tested would burn without difficulty, and the only adjustment to the grate was a roof tile laid across the bars when burning wood. Each fuel was lit in the normal manner and allowed to burn briskly for three hours. The fire was then cleaned by poking from the top, the ash door closed, the fire made up to capacity with mixed grades, and the spark guard closed. The fire was then left without attention and the time was noted when it finally went out.

When burning apple wood the fire kept in for four and a half hours. With gas coke the time was six hours, with good house coal it was 12 hours, and it kept burning for 13 hours with furnace coke. By comparison with the conventional open-close stove, which in some respects is a near equivalent to the 'Caloray', this is an encouraging time for an open fire to last without attention.

Warming the room

A deep firebox of good capacity is able to cruise along with a low rate of burning, without being so sensitive that automatic controls are essential. The principle of the deep firebox is well established, but it tends to produce a warm casing, appropriate for a convector, but without the compensation of sufficient radiant heat. The 'Caloray', however, emits a good proportion of its heat as direct radiation, much of which comes from the baffle at the back of the grate which keeps hot even when the fire is low. Radiation, therefore is mainly straight out from the fire, with little lateral spill.

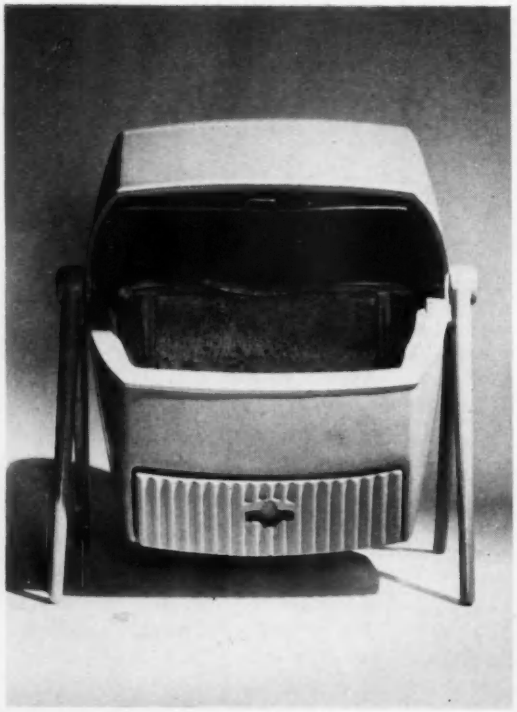
The spark guard is not beautiful, but it is efficient when closed, as it would be in an empty room. It stows easily and when closed down almost halves the frontal radiation, which is a good or a bad point according to the way you live.

Thermal efficiency

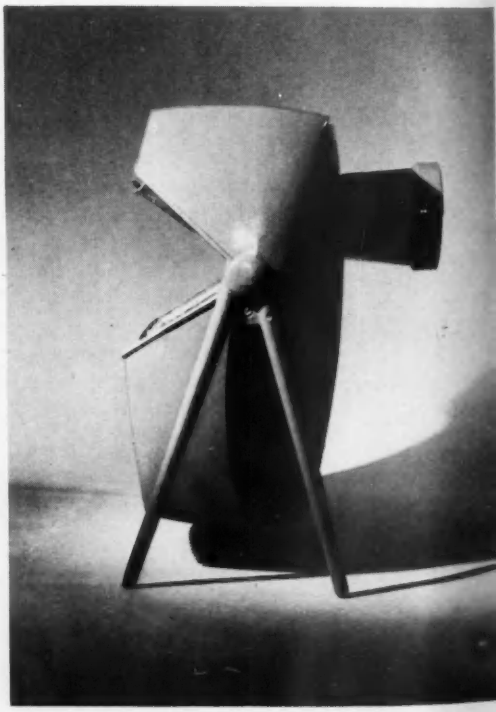
Laboratory test figures are not available, but this fire would not have the highest thermal efficiency. Air consumption is probably not less than 4,000 cubic ft/hour, which is just allowable though it is enough to produce an appreciable floor draught, and more heat will go up the flue than is desirable. A fire needs only about 500 cubic ft/hour actually to burn the fuel, the rest being drawn over the fire through the front opening. Some modern restricted throat fires have a total air requirement as low as 2,000 cubic ft/hour.

Such losses in the fire are hidden from the user, who can only measure the amount of fuel necessary to keep

The disconcerting effect of the fire opening, which resembles the jaws of a man trap, detracts from the otherwise pleasing form of the main casing.



The way in which both fire opening and legs spring from the central support give an unnecessary emphasis to this feature. The sketch on page 56 suggests one way in which the problem might have been overcome.



Acknowledgement
We wish to thank Selden Ltd for co-operating in the photography for this article.

certain rooms warm; and such things as 'cold walls', over ventilation, or poor insulation may well affect the fuel consumption to a greater extent than the efficiency of the fire. Even when efficiency data are published they are rarely available in the showroom and need interpretation. To make a judgment of comparative efficiency, therefore, the public must usually depend on a qualitative assessment from a builder or merchant, who may be more interested in other factors.

Air control

A more immediate matter is the control of primary air – through the ash pan and up through the grate. A fire is turned up or down by this means and, unless there is a fine control that can be adjusted precisely, any inherent lack of efficiency may be aggravated in use. Control by drawing out the ash pan, as in this case, is altogether too crude for a modern fire, and we are surprised that the makers even contemplated such an economy.

The front opening of the fire has been kept down to about 190 sq inches, which is reasonable for heat conservation, but it could well have been further reduced at the sides with advantages in several directions.

The baffle acts as a radiant source, for the gases must pass across its face, and it restricts the flue opening to a narrow annular channel. The gap can be set to suit the flue.

There are convection vents in the back of the outer casing, which are so placed that they cannot usefully duct warm air. They are presumably there as lip service to the convection idea; but as it is in no sense a convector fire, their presence is misleading.

Construction

The price of £17 – £24 is low for a fire of this size and results from a commendably small number of parts. There are only 20 parts in the whole appliance, which is almost half the usual number. The main cast iron casing, for instance, is in only two parts, one of which is the back plate. This is an unusual construction that calls for a difficult mould-making operation, the cost of which is evidently saved in assembly and other directions.

There is a choice of support, either by splayed legs, a plinth, or by corbelling out from the wall short feet, with a free space beneath. The legs are the easiest type to install but they only support the weight of the fire, which must be held upright by the firmness of the flue spigot joint.

Appearance

We are all of us impulse buyers to some extent, and this fire has an attractive price coupled with a general appearance that is up-to-date and fresh. It owes little to any other fire and is clearly an original design – forward looking rather than traditional – that one

This rear view shows the inclusion of vents, but this is not a convector fire since there is no way for air to enter through the bottom of the casing. Provision for a gas ignition plug is located in the lower part of the back plate.

Primary air is controlled by drawing out the ash pan for which a special tool is provided. The spark guard swivels up into the main casing when not required.

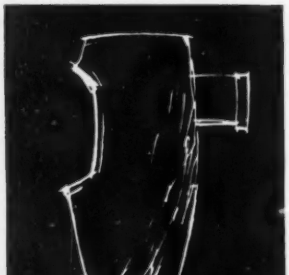
Two alternative supports for the fire are shown here and are more successful than the stilt legs as they draw less attention to the point on which the guard swivels. The fire may also be fixed to the wall at the back leaving a free space beneath.

might have a conscious pride in owning.

If we analyse this appearance more closely, we find that none of the surfaces is flat, but gently curved or crowned, meeting each other in sharp edges that define the shape precisely. Thus the observer has an immediate knowledge of the main lines of the shape, leaving details to be studied later; whereas a softer shape, with generous radii on the corners, might be difficult to appreciate by sight alone. The swelling is at its greatest width and depth at about three-fifths of the height, which gives an upward stress to the form. Many fires and stoves seem to sag down towards a broad base, as if their weight were not enough to give stability without buttressing. There are technical advantages also in avoiding surfaces that are meant to be flat but may become distorted in manufacture.

Most of the detail is good for it seems to have been studied in the round as well as on a drawing board. For instance, the fire opening and the ash pan front have a considerable curvature in elevation; and the ash pan door, which is a part likely to take punishment, carries the only enrichment in the form of vertical fluting.

A more subtle shape for the fire opening might overcome the effect of open jaws.



Inappropriate fashionable elements

All these factors together make a shape that will lie in or before a rectangular fireplace, and be at home in most rooms within this frame. To some eyes the fire opening may be too much like the jaws of a man trap and certainly this makes a gash in the body of the fire without relating itself to the other forms, so that it seems to have come from another chapter in the geometry book. The cylindrical spark guard is pivote at the flanks and rotates on this axis to stow awa between the inner and outer casings. This is a ne solution, but it has been detailed in an obvious wa (reminiscent of a meat safe) and allowed to domina and obtrude.

When the stilt legs are used they bring an addition and undesirable emphasis to this pivot point fro which they spring, making it appear as if the whole fi were able to rotate about the spark guard axis, which so absurd that it is unpleasing. A further point again the stilt legs is that they are strictly in pseudo co temporary style. In other words they are – or were fashionable in a way that is avoided by the body of t fire. A fire has a long life and should respond to t underlying swell of trends in family life; not to t ripples or even the waves that are significant for goo with a shorter life.

Conclusion

A previous article (DESIGN January 1955 pages 33–4 considered some of the technical advances that we giving new life to the open fire, and showed that pr occupation with technology had overlooked or had y to meet the family's need for a gracious focal point. T be warm and efficient were not enough, and the mode open fire had still to find a way towards urbanity an good visual design. The 'Caloray' starts at the oth end, and achieves a measure of pleasing appearance, some of its parts, that is commendable. But it takes technological step backwards.

Lane & Girvan Ltd comments on the author's criticisms:

We appreciate the care and trouble which has been taken by your contributors in reaching their conclusions on this appliance. We would like to add the following observations:

'Caloray' in the home

Provision has in fact been made on all models for a gas ignition plug, which is located at the centre of the lower part of the back plate. This is easily removed and the burner can be inserted. The gas burner is supplied by the maker on request and the majority of installations are being made with this feature.

Testing with different fuels

We are surprised that on gas coke the banking time was only six hours, although it kept burning for 13 hours with furnace coke. With the standard test gas coke, which is by no means the best of its kind, we have no difficulty in maintaining a banking time of 10–12 hours, and in the absence of other evidence we must sympathise with your contributors in their quality of gas coke available.

Air control

While the control by drawing out the ash pan appears to be rather primitive, it may be of interest to kno that spinner type and groundflap types of air contr were exhaustively tested both on the front of the ashp and at the rear of the firebox. We were satisfied th with the contour of the mouth of the firebox these fi controls were valueless. The influence of primary a below the fire-bed was quite different from t reaction in the openable stove and we finally settle upon the combined ash pan and air control, as its op or closed position provided all the adjustment necessa and the simplicity of the feature appealed to us.

Conclusion

We are glad to have your criticism of the appearanc which we consider more controversial than the techn logical aspect. We believe that what at first sight retrogressive is not so in fact, and the lack of co plaints from the many installations which have no been made confirms our opinion. The closed stove an openable stove are frequently sources of trouble unt the owner has adjusted himself to the finesse of t various control adjustments. We consider the absenc of these on the 'Caloray', coupled with its overa thermal efficiency, to be technologically progressive.

1

2

3

1, 2 *and* **3** Plastics watering can designed by M. O. Rowlands for Ekco Plastics Ltd. This unconventional design has been arrived at by a fresh analysis of the user's requirements, and the demands of mass production, although perhaps a more satisfactory solution for the handle, a simple T-section which feels thin in the hand, could be found. The hinged lid and spout, **3**, facilitate ease of filling and can be removed to provide a graduated bucket. *£2 9s 6d.*

In the first article of this series in DESIGN *for July, the author, who is editor of 'British Plastics', dealt with the application of plastics to product design in general. In this, the second article, he lays one or two popular misconceptions about the application of plastics, and discusses several specific and widely differing products where plastics have shown advantages over more conventional materials.*

New opportunities for plastics

PHILLIP MORGAN

THERE ARE TWO BASIC FALLACIES in the layman's approach to plastics. There is the "I suppose everything will be made of plastic soon" approach. The plastics industry does not encourage this and, by and large, it makes a big effort to see that plastics are not used where they are not suitable and often only recommends their use when to do so gives a better product or simplified production. The second approach is the "make it in plastics, it's cheaper" one. It is safe to generalise that, weight for weight, plastics as a class are more expensive than the common materials such as glass, wood and steel. However, methods of production, combined with a superior performance may easily make the finished product cheaper in plastics.

In spite of the fact that the two approaches are basically (but not always) misleading, the products of the plastics industry *are* reaching out into widely differing and often unexpected fields. Perhaps this is not surprising for anything can happen in an industry which supplies moulding material for the Great Seal of the Realm and tubing for an artificial bile duct.

Gardening is one such example. We are all familiar with vinyl hose and some of us have used transparent vinyl cloches. But there are several other uses, such as perforated black polythene film for weed suppression in strawberry beds, conferring protection against some types of diseases and also obviating the need for strawing.

Two other new contributions to the garden are the all-plastics greenhouse designed and developed by

BIP Chemicals, not as a production model but as a working prototype, and the Ekco Plastics watering can. The original design of the greenhouse was evolved in 1954 when it won the annual Horners' award, sponsored by The British Plastics Federation. The whole structure is moulded in sections in glass reinforced plastics, self coloured so that no painting is necessary and so simple to erect that, it is claimed, any amateur could assemble it unaided in a day. It is one-third of the weight of a comparable house in traditional materials and a quarter of the bulk. Among the advantages of this type of structure, says BIP, are "comparative ease of production, compactness, lightness, and safety in transportation". The materials are virtually unbreakable in normal handling, are rotproof, and resistant to weathering. Heat loss is substantially less than with glass and care has been taken in the design to meet the requirements of light transmission; the materials are said to transmit proportionately the constituents of the spectrum and a diffused light down to ground level is provided.

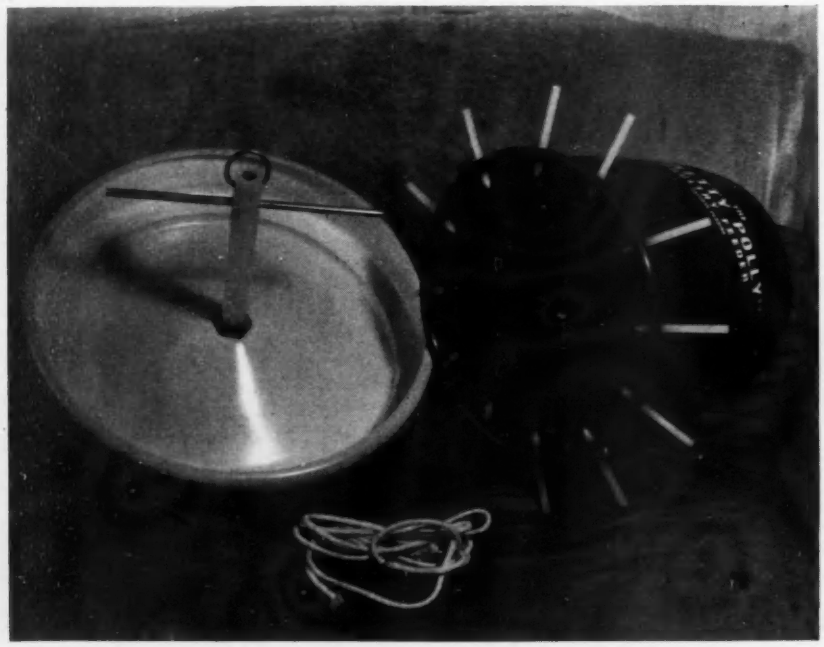
The second novelty for the horticulturist, the watering can, consists of a graduated polythene bucket fitted with a hinged high impact polystyrene spout and lid. Interchangeable roses giving fine or coarse sprays are supplied. For filling, the hinged lid and spout are opened and if required the hinged portion can be removed to allow the bucket to be used alone. It is clear that a great deal of thought has gone into this unconventional design for a watering can to enable it to be mass produced by injection moulding, and among the advantages are lightness, long reach, compact stowing, and the fact that the closed lid and spout prevent splashing. The can is made in natural polythene with red or green polystyrene lid and spout.

A similar application of plastics is in the 'Pretty Polly' suspended hopper poultry feeder designed and marketed by T. S. Ware. The feeder is in two parts – a polythene injection moulded hopper, and a pan in vacuum formed PVC into which the hopper fits. By means of a length of PVC tube and a simple valve, which controls the water supply by weight, the feeder can be converted into a waterer. Apart from this flexibility a number of advantages are claimed for it by the manufacturer, namely that it virtually eliminates waste, is easily adapted to suit different foods, and can be cleaned and handled without difficulty.

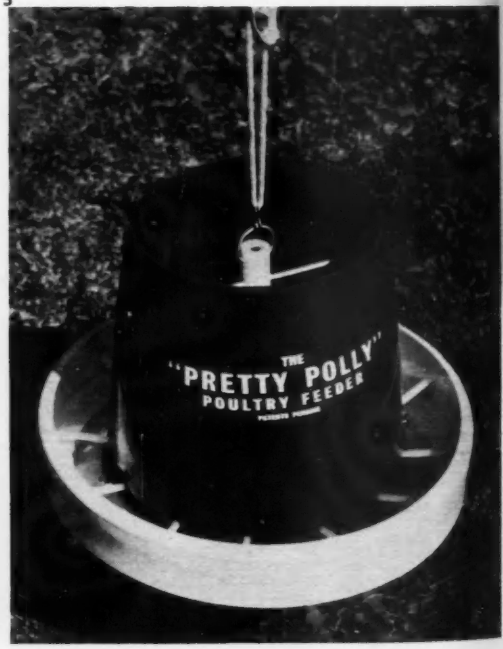
Floors and furniture

A new polystyrene application introduced by Monsanto Chemicals, is a technique for the production of hard-wearing terrazzo type flooring. Pellets of toughened polystyrene are laid, in a mixture of white cement and silver sand, on to a cement base which is still not quite set. This type of floor has been tested for some months and, as the maker claims, it has stood up

4

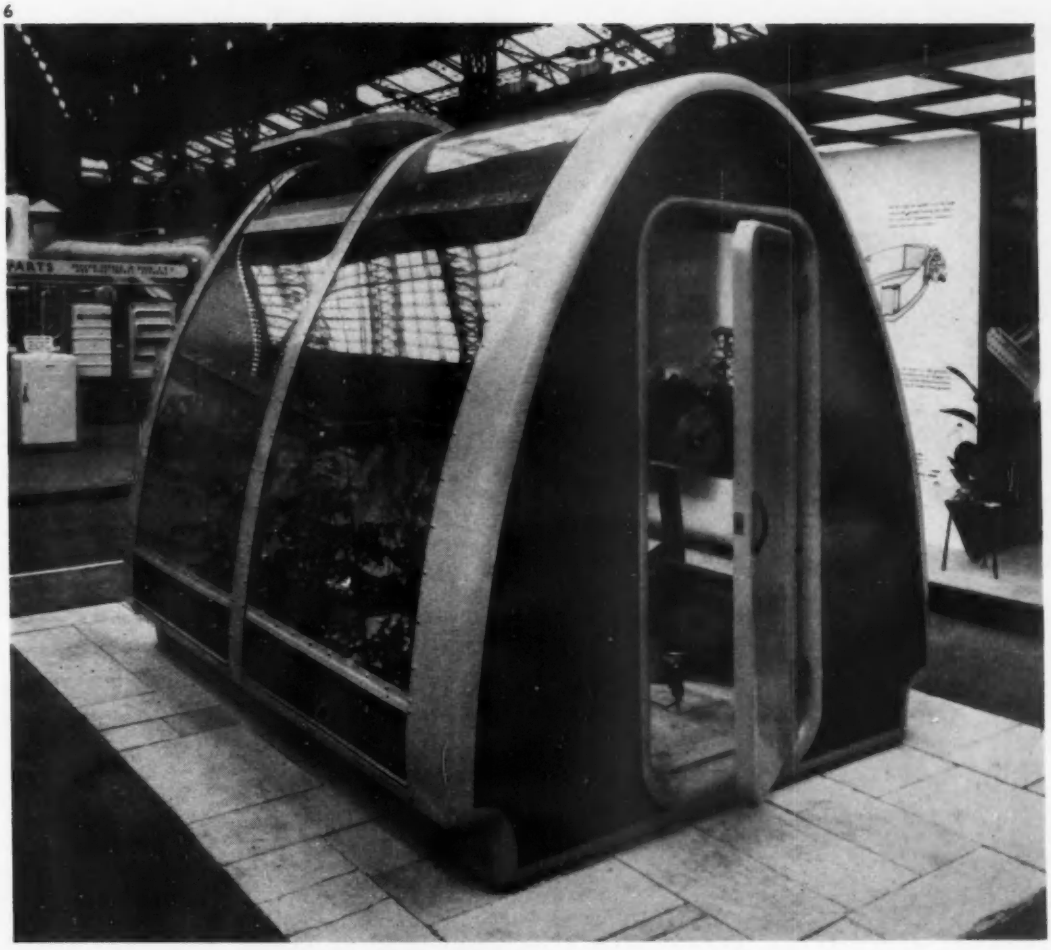


5



4 *and* **5** Poultry feeder by T. S. Ware (Wildhern) Ltd. **5**, The feeder ready for use and **4**, dismantled for cleaning; the polythene fingers on the hopper fit under the lip of the pan, and the cross bar is pushed through the centre column and buttons on to the hopper.

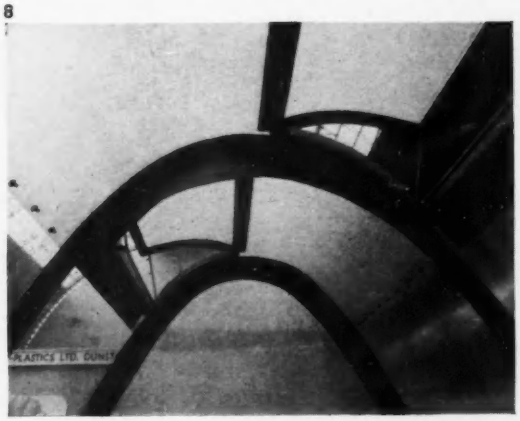
6



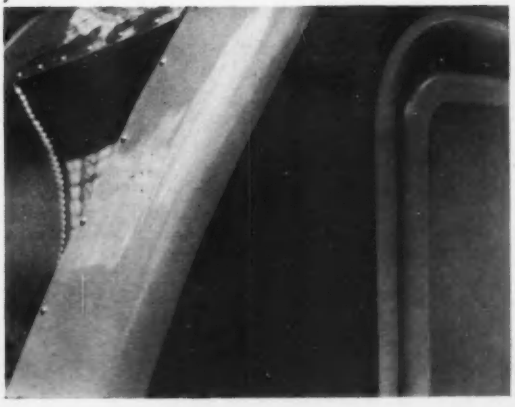
7

6, 7, 8 *and* **9** Polyester/glass greenhouse designed and developed by BIP Chemicals Ltd as a full scale prototype, incorporating recommendations of the National Institute of Agricultural Engineers. The greenhouse can be extended by the addition of extra sections, and the side panels can be either clear or opaque according to particular needs. **7** *and* **9** Exterior details of roof light and the front section moulding. **8** Interior detail of roof lights showing the sectionalised construction.

8



9



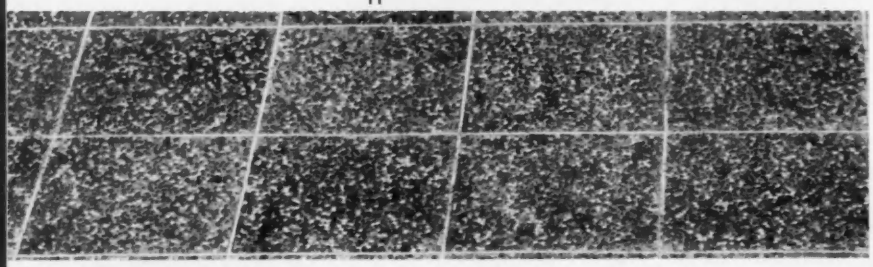
remarkably to heavy wear. Some unusual colour effects can be obtained simply by varying the colour and distribution of the pellets.

The furniture industry has been using plastics for many years, principally as surfacing materials, such as the decorative laminates, and as the adhesives in bonding processes. More recently, successful and attractive upholstery materials in PVC coated fabrics have been widely used. Also a certain amount of moulded furniture from post-formed phenolic laminates or from glass polyester materials has been introduced. However, the really mass production methods which are one of the advantages of using plastics materials have not been fully employed. Examples have been reported from America which show that this criticism is not wholly true there. Injection moulded drawers have been successfully introduced by General Electric for Sears, Roebuck. These drawers are moulded from impact polystyrene and are designed with moulded runners which strengthen the top edge and with a centre guide rail which strengthens the bottom surface. The drawers are a three-sided box and the fourth side is fitted with material to match the rest of the furniture.

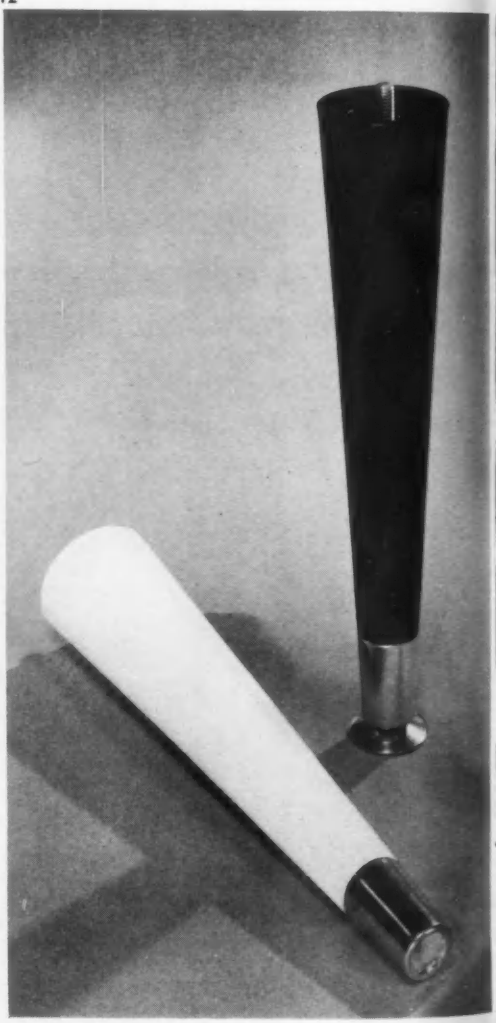
A further contribution of injection moulding to furniture production has been the manufacture of moulded legs for tables and other pieces. These mouldings also originate from America and were developed by the Stylar Division of Plastic Mold & Engineering, from a styrene acrylonitrile material produced by Dow Chemical. The possibilities of the injection moulding process for this component offer great flexibility of shape, size and colour to the designer. In the types illustrated the legs are fitted with plain or self-levelling ferrules in lengths up to 28 inches and diameters up to 3 inches; they can be moulded in a variety of shapes.

10

11



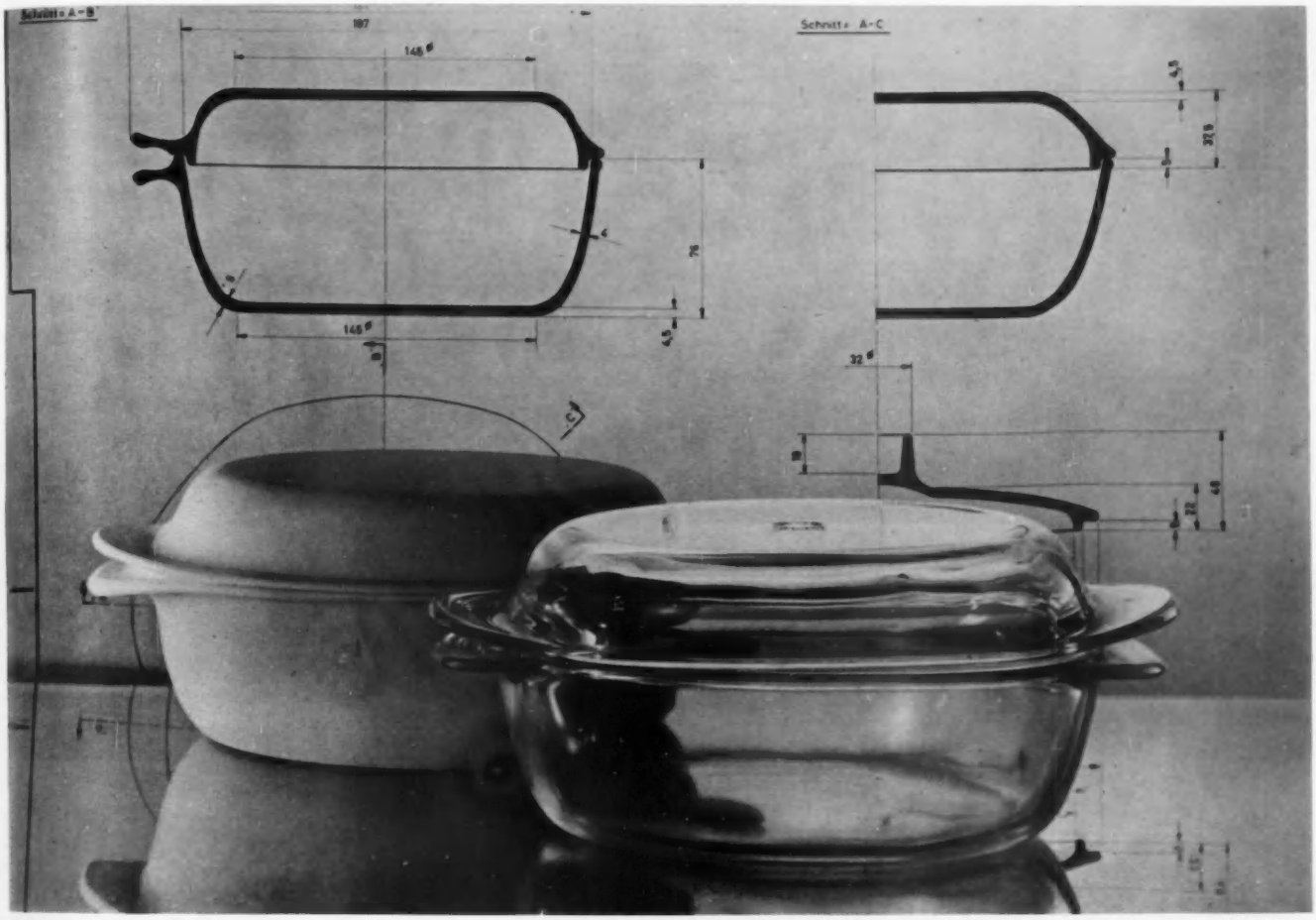
12



10 An injection moulded drawer in impact polystyrene manufactured in America by General Electric for Sears, Roebuck. The drawer has runners moulded into the top edges and a centre guide rail on the bottom which also act as strengtheners.

11 Terrazzo type flooring by the British firm Monsanto Chemicals Ltd, is made from toughened polystyrene pellets laid in a mixture of white cement and silver sand.

12 Moulded furniture legs developed by the Stylar Division of the Plastic Mold & Engineering Co in a styrene acrylonitrile material produced by Dow Chemical International Ltd, an American firm.



One of the dishes, designed by Heinz Löffelhardt, with a full scale plaster model and working drawings.

Germany: progress in oven glass

This report on a new range of oven and household glass is based on information contributed by DESIGN's *German correspondent, Dr Heinrich König.*

IN STEP with its earlier range of oven and household glass Jenaer Glaswerk Schott & Gen brought out last year a new set of designs by Heinz Löffelhardt. The new range includes a set of five dishes which replaces the old set of 28 designed for specific uses, together with a tea service and other miscellaneous household ware.

The five new dishes have three sizes of cover; one size to fit two different capacity dishes. The dishes and covers are remarkable technically in the transition from a circular base to a four cornered top. Extending from just below the top edge and curving slightly downwards are the handles which, being segments of a circle, echo the circular base of the dish. A second cover design with a knob is also available. In addition there is a large plate for the dishes to stand on, a new four-cornered baking dish to replace the earlier oval one, and the tea service, not intended for mass production.

Since Professor Wilhelm Wagenfeld designed a set of household glassware for Jenaer in 1930 many improvements in the technique of moulding glass have been made. It is now possible, for example, to produce

DESIGN 106

thinner, clearer glass without any loss in strength and without any trace of unwanted colour, often a characteristic of this material. Together with these technical improvements, Jenaer Glaswerk, Schott & Gen recently changed over its production to a fully automatic line. The intractable nature of the material and the change over to automation make it essential that there should be a planned, logical design programme where designer, engineer and manufacturer collaborate at every stage of development. These new designs are the result of some two years' careful research.

Taking into consideration the various technical changes it is interesting to compare Herr Löffelhardt's sets with Professor Wagenfeld's from both the technical and aesthetic points of view. The new set is less rigid and at once more sensitive in its relationship of shapes and volumes which utilise the inherent 'colour' properties in the new glass. The most illuminating comparison is afforded between the tea services in both ranges, and although Herr Löffelhardt's is not intended for mass production it does indicate what progress has been made in the moulding of complex shapes in heat resistant glass. Professor Wagenfeld's teapot was based upon the sphere and the circle, whereas the new teapot and cups are based upon a truncated cone giving a less geometric and more organic quality to the design.

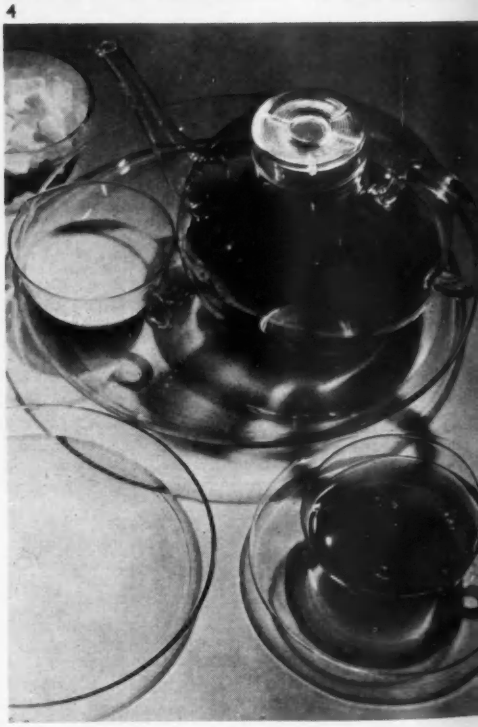
Herr Löffelhardt trained as a sculptor under Georg Kolbe in the 'twenties, after working first as a silversmith, and has designed pottery and glass for a number of firms before his appointment with Jenaer Glaswerk, Schott & Gen in 1954.

1

2

3

4

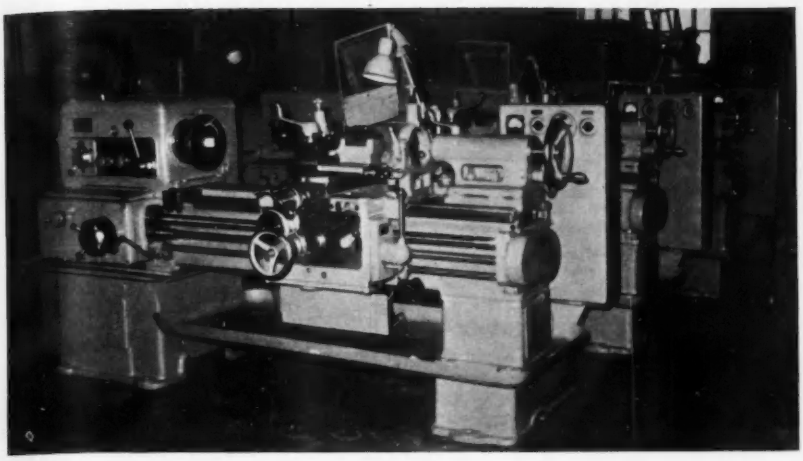


1 A selection from the new set of heat resistant household glass showing the two types of cover.

2 Modelling one of the full scale plaster patterns.

3 *and* 4 The two Jenaer tea services compared: 3, Löffelhardt 1956; 4, Wagenfeld 1931.

A small high speed universal lathe, mass produced at a rate of 12,000 a year or four every hour. The clean appearance of these lathes makes a strange comparison with the ornate decoration in Moscow's underground which typifies the design standards of some other Russian industries. Photographs by Peter Trippe.



USSR: product architecture

Startling facts have been revealed in a recent series of articles published in 'Metalworking Production' on the findings of an editorial delegation, which studied the machine tool industry in Russia. The author considers some of the inferences to be drawn from these facts which could be of vital significance to British industrial design.*

L. BRUCE ARCHER

IT IS CLEAR that the Russians have succeeded in organising the manufacture of enormous quantities of lathes, drilling machines and all the other impedimenta of production. It has been found, for example, that a single Russian factory is producing the equal to Britain's entire output of radial drills, while another is producing small universal lathes at the rate of 12,000 a year. The back-log of half a century has almost been made up, and at the present rate the Russians will soon be equipped with the means of mass production equal to that of the United States.

In many respects, the Russians have benefited by coming late on to the industrial scene. Free from the disadvantages of having old established industries with habits and standards adopted in less scientific days, and now difficult to break away from, the Soviets have been able to base their designs on the most modern and efficient precepts.

Information published by several British government and semi-official sources indicates that the Russian output of qualified engineers per head of population is four times that of Great Britain and they will shortly be the only country in the world whose supply of technicians and technologists matches current demands.

Particularly significant to readers of DESIGN are the almost unanimous comments of several independent observers on the Russian system of training designers. Their effort has been concentrated almost exclusively on the aircraft, armament and machine tool industries, and in these fields the education system has produced large numbers of designers who are eager and highly efficient. It may be noted that most Russian engineers are required to pursue liberal studies, which are also being recommended (not very successfully) to British technical colleges.

The Russians are making definite steps to enter the politically desirable mass markets of the Middle and Far East, where they will be in direct, and no doubt, bitter competition with the Americans. Neither the Russians nor the Americans are as dependent on their export trade as the British. If, for political or politico-economic reasons, the two giants decide to conduct a cold war in consumer goods with the densely-populated, under developed countries as the prize, they will be able to give away much more in price-cutting and hard-selling than we could ever afford.

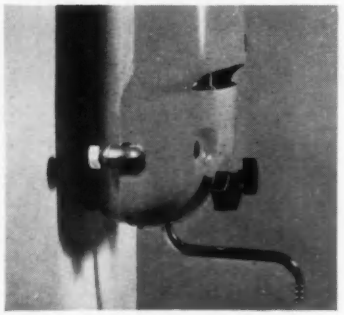
In anticipation of this entry into world markets, Russian designers are beginning to discuss for the first time the question of appearance design. They have coined a new word for industrial design – product-architecture – and literature on the subject is appearing in the Russian technical press. Already many of their machine tools compare favourably with the American, British, German, and Swiss counterparts, and Russian achievements in other fields make it clear that once they decide to modernise, they spare neither effort nor sensibilities.

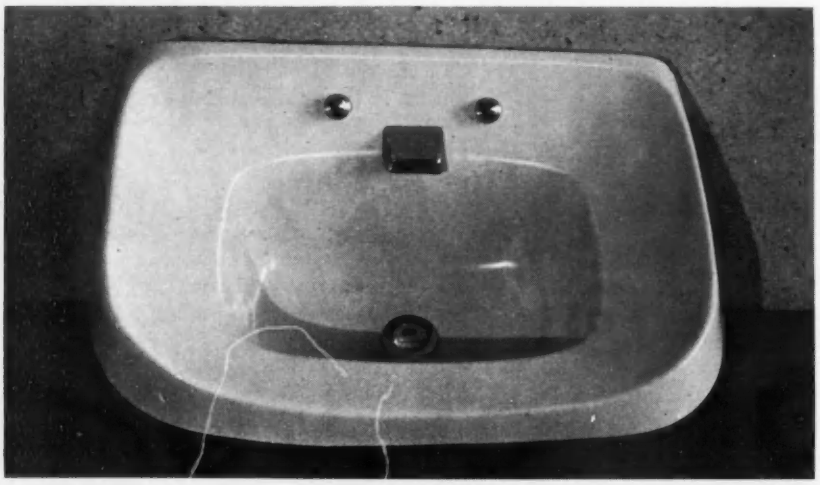
* Now published as a reprint, McGraw-Hill House, 5s.

Italy: gas water heater

THIS GAS WATER HEATER is a comparatively small model designed for direct supply to sinks or wash basins and does not require a flue. The mechanism is enclosed in a sheet steel casing which is remarkable for its subtlety of form, the only protrusions being the twin taps and the swivel spout. The trademark is carefully placed to balance the small depression housing the ignition button.

Finished in a range of bright colours, the heater was designed by Alberto Rosselli and is manufactured by SIM, Milan.





Japan: railway washbasin

AS PART OF A PLAN to produce lightweight railway coaches for the State railways in Japan, the Industrial Arts Institute, Tokyo, was asked to co-operate with the railways' technical research department in the design of prototype washbasins in polyester/glass. The conditions of use affecting the design of this type of equipment were carefully studied and particular attention was paid to the shape of the bowl to prevent splashing. Trials were carried out on moving trains to find out what shapes most effectively reduced splashing at various speeds and at varying degrees of deceleration.

Two types of basin were developed – one circular, the other rectangular. In each case it was found that a comparatively small, deep centre section with steep walls, to hold the water, with a wide outer surface at a shallower angle, were effective against splashing and overcame the necessity for the overhanging lip used in traditional ceramic carriage basins.

The weight of each of the polyester glass basins was found to be one-tenth that of an equivalent basin in ceramics. In view of this startling weight reduction it is surprising that this material had not been considered in the experimental carriages shown in the British Transport Commission's 'Modern Railway Travel' exhibition, reviewed on pages 25–29.

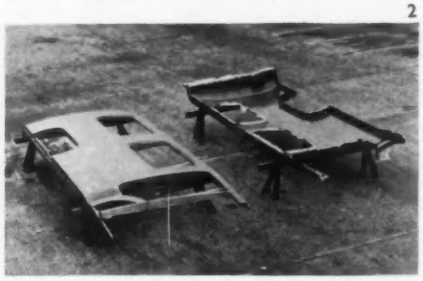
Miscellany

Plastics ambulance for LCC

At the LCC's depot at Wandsworth work is in progress under the supervision of J. D. Burton, transport officer of the supplies department, on a new ambulance with a body in glass fibre plastics, 1. The new ambulance will eventually replace the design at present in service, and some of the 12 which are expected to be in operation by the end of the year, are already on the road.

1

2



The glass fibre body which is of stressed skin construction, is built on an Austin 30-cwt forward-control van chassis, that has been modified to incorporate a De Dion type rear axle in order to keep the loading height down without the need for a bump in the floor to clear the top of the axle. At present the design has glass fibre sides, cab and rear doors, and roof with a translucent panel, all moulded in rigid sections, 2, but retains a pressed steel front-end assembly and the Austin radiator grille, together with a metal body floor. A simple, non-structural, wooden frame on to which the interior fittings are attached, is incorporated into the panel during the laying-up process. However, a subsequent model, in course of development at Wandsworth, will have what is virtually an all-plastics body, including a one-piece front-end moulding with wrap around windscreen and a one-piece moulded floor unit including the wheel arches.

The new ambulance has a number of operating advantages over the older type. For instance the wheelbase is shorter by almost four ft, without any reduction in patient accommodation; in fact the new ambulance is slightly larger in body dimensions. The shorter wheelbase has cut down the vehicle's turning circle by 10 ft, as well as making a considerable weight reduction. This, plus its low loading make it extremely manoeuvrable and economical to operate, an important factor in the growing congestion of London's traffic. The plastics body, too, facilitates ease of maintenance, and offers high resistance to the minor wear and tear an ambulance must collect in the course of its normal operation.

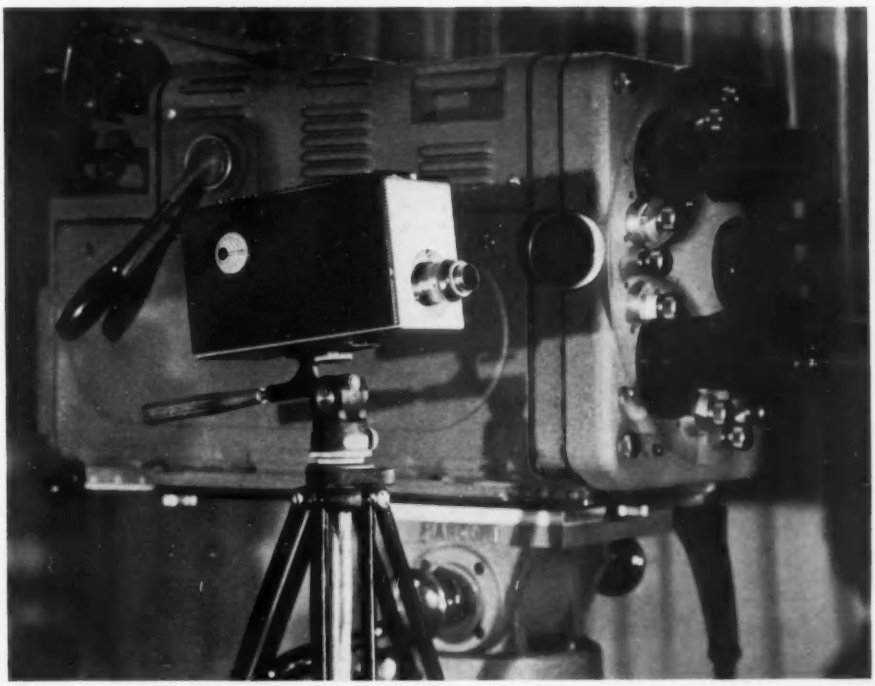
From the patient's point of view the new ambulance is equipped for comfort; the heating and ventilating unit is independent of the engine cooling system, and provides an ample flow of warm, fresh air within a few minutes of starting.

Television in industry

Television has a great many applications outside its popular role as the 'idiots' lantern,' a fact often overlooked by its domestic adherents. In industry it is being applied to a number of diverse jobs where, for a variety of reasons, direct observation is impossible or inadvisable. The main industrial uses of television can conveniently be classified as follows; remote observation, remote inspection, and remote study. All of which would include inspection of inaccessible or dangerous areas – boiler flame conditions for instance; observation of dials, meters and gauges; destructive testing; observation and control of traffic; scrutiny in banking; and time and motion study.

To meet these and many other specialised requirements Marconi has produced new industrial television equipment consisting of a camera and a remote control unit which is notable for its flexibility and convenient size. The camera, fitted with a miniature 'Vidicon' tube, measures a little over five inches in length and can be mounted either on a standard tripod or on a special mounting designed to suit particular operating circumstances. All controls are carried out, once the initial setting is done, on the control unit at the viewing point, which can be as far as 2,000 ft from the camera itself.

The equipment can be set up with one camera feeding several monitors, or several cameras feeding one monitor with a switch selection of the required channel. For special applications weatherproof or explosion-proof housings can be fitted and a remote panning apparatus can be supplied or developed to meet specialised requirements.



The Marconi Industrial Television Equipment might usefully be compared with the RCA JTV-1 equipment illustrated on page 48.

DESIGN 106

Maximum comfort, great strength, good looks. Cintique and Firmback chairs combine ALL THREE of these qualities at prices everyone can afford

Send for Cintique colour brochure illustrating the full range of settees with different matching chairs and also for catalogue showing the range of Firmback Chairs

Write to:
CINTIQUE CHAIR CO.
Dept. D.1, Firmback Works,
Andrews Road, London, E.8

Firmback Model F70 (*ebonised*)
Designed by Ward and Austin

Cintique Unit Chair Model U22
Designed by Ward and Austin

Cintique Chair Model E81 *and* **Settee Model T93**

WEDGWOOD
Strawberry Hill

STRAWBERRY HILL in fine bone china was the only pottery to receive an award as one of the twelve outstanding "Designs of the Year" shown at the Design Centre, London. It was designed by Millicent Taplin M.S.I.A. & Victor Skellern A.R.C.A., F.S.I.A.

Dinner Set for six £32.15.6, Teaset for six £9.16.6, (Teapot 38/- extra): Coffeeset for six £7.14.6. Each piece may be bought separately.

The Wedgwood Rooms at

Marshall and Snelgrove, LONDON, BIRMINGHAM & MANCHESTER · Robinson & Cleaver, LONDON & BELFAST Hamptons, LONDON · Beales, BOURNEMOUTH · Howells, CARDIFF · Patrick Thomsons, EDINBURGH · Pettigrews, GLASGOW · Schofields, LEEDS · Binns, MIDDLESBROUGH Griffin & Spalding, NOTTINGHAM · Elliston & Cavell, OXFORD · Robsons, NEWCASTLE · Spooners, PLYMOUTH

NEWS

PEOPLE

Ford ESU travel grants

Store planning and the training of industrial designers are two of the subjects to be studied by Hulme Chadwick and Eric Clements, who are amongst the winners of the Ford English Speaking Union travel grants for the year 1957–8, which provide for a stay of 10 weeks in the USA.

Eric Clements, a lecturer at Birmingham College of Art and Crafts and the designer of the Bolton Jewel (DESIGN July 1956 pages 36–7), hopes to take up his

Eric Clements

award early next year. He intends to study different methods of training industrial designers in universities, technical and art colleges to learn something of their social organisation as well as their teaching methods. Mr Clements is particularly interested in the relationship of schools and colleges to the industries they serve, and he hopes to be able to visit a number of industrial concerns to see the kind of conditions under which designers are employed. He also looks forward to meeting architects, designers and educationists, and will naturally take the opportunity to see as much as he can of America and of American art collections. During his stay he intends to visit Pittsburg, Detroit (what designer could miss Detroit!), and Seattle as well as New York, Chicago, Philadelphia, and Los Angeles.

Hulme Chadwick's visit to America is inspired by a different reason. He is, very realistically, interested in supermarkets, store planning, shopping centres and the like, so there is no better place for him to see modern shopping in action than in the United States. Mr Chadwick feels that supermarket shopping, in spite of an English prejudice for personal services, will take a firmer and firmer hold on the public, because of the convenience it offers the customer and the kind of built in advertising it offers the retailer. However, supermarkets are only a part of any plan for smoother shopping, and Mr Chadwick will study the large shopping centres the Americans are building on the outskirts of some of their principal cities which make provision for an increasingly mobile, or rather auto-mobile shopping public. He intends to see and talk to as many designers, architects, store managers as he can, but speculates on who will wear out first, the Americans or himself; the Americans, of course, have a

Hulme Chadwick

reputation for endurance, on the other hand so, as Mr Chadwick remarked, have north countrymen like himself.

Stair tread winner

G. S. Sutcliffe (right) chairman of Ferodo Ltd congratulating E. F. H. Foster on his winning first prize in the Ferodo stair tread cover design competition. The presentations to the three winners were made recently at an exhibition at the Hungaria restaurant, London, where a selection of the best designs submitted were on view.

Designer heads sales team

Ace Radio Ltd has recently announced the appointment of Victor Taylor, its chief designer, as marketing director of the firm. In this capacity he will head a team of senior executives whose aim, the firm claims, will be to "co-ordinate sales and design policy, improve the 'Ace' designers' appreciation of current market conditions, raise the standard of product design and invigorate sales promotion".

This announcement is all the more encouraging in the light of the impending establishment of a Free Trade Area in Europe. As John T. Murray pointed out in his article on 'Directing designing' (DESIGN June pages 31–32): "the industrial designer who is a good enough business man to command a seat on the board of directors" must be an essential member of any industrial team as Britain moves into this difficult economic era.

Mr Taylor has been responsible for the design of the firm's radio cabinets for the past 10 years, and he was appointed a director of Ace Radio Ltd in 1954.

FBI industrial art award

The annual travel prize given by the Federation of British Industries Industrial Art Committee to a final year student of the Royal College of Art has this year been awarded to Douglas Evans. Mr Evans was a student at Birmingham College of Art and Crafts before he went to the Royal College where he studied in the industrial design (engineering) department.

New post for French typographer

Maximilien Vox

It has been announced that Maximilien Vox the French typographic and graphic designer has accepted the post of typographical and artistic adviser to the Société Anonyme Monotype, Paris. M Vox is a well known figure in the graphic arts, particularly in the field of book production. He is a printer and engraver and member of the Salon d'Automne; he won the Bluementhal prize for typography in 1926 and is the holder of the Saintour prize of the French Academy of Historical Research. A journalist and publisher, M Vox edits the French printing annual 'Caractère Noël', and is a founder of the Ecole de Lurs-en-Provence.

ASID staff changes

Sally G. Swing, the executive secretary of the American Society of Industrial Designers for the last five years has been appointed assistant to the director of information at the New York office of UNESCO. Mrs Ramah Larisch, Miss Swing's assistant for the past two years, takes up the post of national office secretary of ASID.

New Cotton Board chairman

The Board of Trade has announced that Lord Rochdale has accepted the President's invitation to become chairman of the Cotton Board in succession to Sir

continued on page 69

1952/3 1953/4 1954/5 1955/6 1956/7

700
650
600
550
500
450
400
350
300
200

Last year over 600 firms used the RECORD OF DESIGNERS

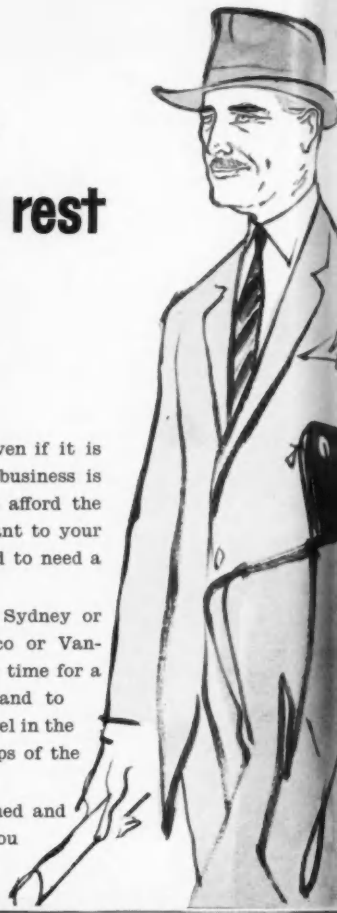
Why don't you? It's a free service of introduction between manufacturers and designers.

RECORD OF DESIGNERS,
Council of Industrial Design,
The Design Centre,
28 Haymarket, London S.W.1

TRAfalgar 8000

GOING ABROAD?

Make it the rest you owe yourself



Take your journey by sea, even if it is only that part after your business is done. You'll say you can't afford the time. But if you're important to your organisation, you are bound to need a good rest.

You may have to go to Sydney or Auckland, to San Francisco or Vancouver. You even may have time for a short break in Honolulu—and to all these places you can travel in the large, very comfortable ships of the Orient Line.

Back home again, refreshed and fit, you will be thankful you travelled in an Orient liner.

ORIENT LINE

ENGLAND AUSTRALIA NEW ZEALAND CANADA U.S.

Chief Passenger Office
26-27 Cockspur Street, London, S.W.1 TRA 7141
City Passenger Office
9-11 Billiter Square, London, E.C.3 ROYal 5678
or your local Travel Agent

NEWS

Raymond Streat who retired in September.

Lord Rochdale was president of the National Union of Manufacturers from 1953–6. He is chairman of Kelsall and Kemp Ltd and Kelsall and Kemp (Tasmanian) Ltd, and is a director of the Consett Iron Co. He is also a governor of the BBC, vice president of Lancashire and Yorkshire Industrial Development Association, and a member of the Central Transport Consultative Committee.

New RSA chairman

Sir Alfred Bossom

Sir Alfred Bossom has been elected chairman of the council of the Royal Society of Arts for the year 1957–8.

Sir Alfred is a well known architect both in this country and the United States, where he went in 1903, and was responsible for some of the early skyscrapers as well as for rehousing and restoration work. He entered politics when he returned to England permanently, and has represented Maidstone in Parliament since 1931. He has been a fellow of the society since 1928 and has served on its council almost continually since 1929.

Offices by Ernö Goldfinger

Ernö Goldfinger seen here on the stairs of the office building he has designed at 45–6 Albemarle Street. The new premises which will be occupied by three firms are, in fact, two separate buildings behind one façade. Most of the interior schemes, which include the staircases, lifts, display fittings, etc, have been designed by Mr Goldfinger himself. He has avoided over-extravagant décor and current design clichés, and wherever possible has used standard fittings. The logic of the exterior is paralleled by an abstemious elegance inside.

Professor's visit to The Design Centre

Gyorgy Kepes, professor of visual design at the Massachusetts Institute of Technology, is seen in The Design Centre on a recent visit to Europe. Mr Kepes is well known for his writings on design principles and the artist's relation to the scientific and technological climate of his time. His two most important books are 'The Language of Vision', and more recently, 'The New Landscape'.

INDUSTRY

Future of BIF

It has been announced that the 'British Industries Fair' will not be held in 1957. The Birmingham Chamber of Commerce is in favour of placing the fair on an international basis, but as a deputation from the chamber explained to the President of the Board of Trade, Sir David Eccles, it would be impractical at this stage to organise and stage an international fair. The president told the deputation that the question of an international fair in the future depended primarily on the attitude of British industry.

British cars to the United States

Figures recently released by the British motor industry indicate that British cars are strengthening their hold on world markets. It is particularly encouraging to note the increase in sales to the dollar areas, especially the United States, which is now the largest single overseas market for British cars. Some 43,000 cars have been exported there in the six months from January to June of this year, and in the month of June alone shipments totalling 8,300 models were made. This is three times the corresponding figure for 1956.

The 1957 motor show

This year's annual 'Motor Show' is being held from October 16–26 at Earls Court and will be officially opened on Wednesday, October 16 at 12 noon by the Prime Minister, the Rt Hon Harold Macmillan, MP. Almost 60 car manufacturers will be represented among some 500 exhibitors, and models from the United States, Canada, France, Germany, Italy and Czechoslovakia will be shown, together with the British exhibits.

The display space this year is larger than at any previous 'Motor Show' at Earls Court, and the exhibition is divided into various sections, including cars; coachwork; accessories and components, tyres, motor boats and marine engines, etc. A special service has been organised for overseas visitors, which includes the exclusive use of a furnished lounge, staffed by members of the Society of Motor Manufacturers' overseas department, together with a corps of interpreters.

Lighting fitting range extended

Harris & Sheldon (Electrical) Ltd has enlarged its range of 'Handslite' lighting fittings to cover cold cathode lighting by the absorption of the 'Meico' range, previously manufactured by Micramatic Ltd. The company claims its products now cover all aspects of industrial and commercial lighting.

Straighter curves

A new flexible ruler for designers and draughtsmen is being imported by Langford & Hill Ltd. The 'Hansa-Cobra' flexible ruler is made from extruded plastics, triangular in section with slightly concave surfaces between the points which flatten out under pressure

and keep the ruler in any position on the drawing. It is washable and has a smooth surface which makes it simple to use the pen or pencil round any kind of curve. The ruler is made in lengths from 12–60 inches and costs approximately 1s per inch run. PETER HATCH

Heat underfoot

An even distribution of heat over the whole room at low cost is claimed by the manufacturer for 'Thermalay', an underfelt incorporating automatically controlled electric wiring. The underfelt is installed under the carpet and connected to a five amp plug. The manufacturer also claims that the new underfelt is completely safe as the electric wiring is insulated and protected

continued on page 71

BY APPOINTMENT
TO HER MAJESTY THE QUEEN

SUPPLIERS OF WALLPAPERS AND PAINTS

WALLPAPERS

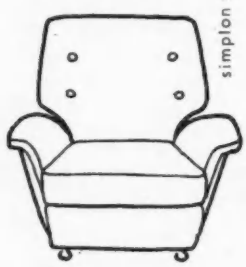
Whether it is traditional or modern we can meet most requirements with our wide and varied range of designs

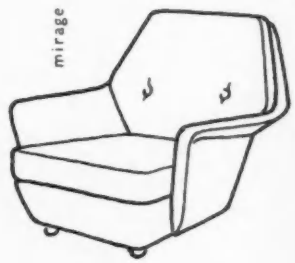
WE INVITE YOU TO VISIT OUR SHOWROOMS

JOHN LINE & SONS LTD

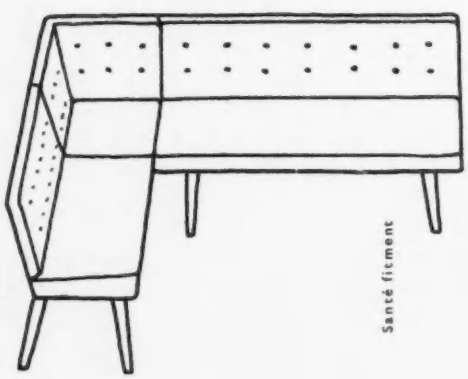
MAKERS OF FINE WALLPAPERS AND PAINTS

213-216 TOTTENHAM COURT ROAD
LONDON · W.1





available from leading houses / please write for folder to Andover Gardens London N.7. **H. K. Furniture**



NEWS

by a hard surface plastics covering, and that the heat will never become excessive no matter how long the current is on.

'Thermalay' is produced in four sizes by Thermalay Ltd, a subsidiary company of E. Illingworth & Co (Bradford) Ltd.

EXHIBITIONS

In the first 25

This year, as in previous years, there is no official British participation in the 'Triennale' now on show in Milan until November. However, this does not mean that Britain will be unrepresented; the Italians themselves have organised a special section in the exhibition to display work by those designers they consider to be the best 25 in the world, and have invited Misha Black and Milner Gray, both Royal Designers for Industry and senior partners in Design Research Unit, to exhibit in this section. The work they are showing includes designs by Mr Black in his capacity as consultant to the British Transport Commission, and British 'Pyrex' oven glass by Milner Gray.

Misha Black has also been invited to sit on the jury for this year's Compassio d'Oro (Golden Compasses) Award.

British fashions and textile fair in Stockholm

The British fashion and textile industries organised a comprehensive exhibition of fabrics and fabric designs at 'St Erik's Fair' in Stockholm which finished last month. The exhibition was one of the largest shows of British textiles ever held abroad, and included everything from household textiles and a display of British carpets, to the uses of 'Terylene' and a special 'Hall of Beautiful British Fabrics'.

The exhibition was officially opened on August 31 by the British Ambassador to Sweden, Sir Robert Hankey.

British lantern at Triennale

One sodium street lighting lantern, designed by Richard Stevens for Thorn Electrical Industries Ltd has been selected by the Italian committee of this year's 'Triennale' for exhibition in the international industrial design section. The 'Atlas' lantern uses a hermetically sealed 'Diakon' moulded 'opticell', and its maker claims for it a number of features which simplify installation and maintenance, and reduce operating costs.

Showrooms for office equipment

H. J. Ryman Ltd recently opened new office furniture and office machinery showrooms, designed by George Collett Associates, at its Great Portland Street branch in London. The ground floor has been retained as a shop, selling stationery sundries on a self service basis, and the showrooms themselves are on the floors above. The mezzanine floor features a display of all types of office machinery, including typewriters, adding and calculating machines, dictating and recording machines and intercom systems. On the next floor, illustrated here, all kinds of office furniture are displayed in a setting which utilises modern furnishing fabrics and wallpapers.

Design on the sleeve

An exhibition of record sleeves will be held at the London School of Printing and Graphic Arts from November 4–29. The exhibition, which is the first of a series dealing with various aspects of printing, is organised by the design department and will include a number of student designs as well as the work of famous designers.

International playing cards

To coincide with the International Conference of Playing Card Manufacturers in London, Thomas De La Rue will hold an exhibition of international playing cards at its London showroom, 84–86 Regent Street, W1, (see pages 35–9) from October 14–25 (9 am–5.30 pm, Saturday 9 am–12.30 pm). A new design for playing cards commissioned by the firm from the French artist Jean Picart le Doux will be on view.

Environment? Artwork? Game?

In August the ICA staged an exhibition, or rather an exhibit, called appropriately enough, 'An Exhibit', which consisted of a number of acrylic panels in varying opacities and colours strung at right angles to one another in a kind of calculated random arrangement. 'An Exhibit' was conceived and constructed by Victor Pasmore and Richard Hamilton and verbalised, as the press card said, by Lawrence Alloway, and in essence was a cross between a Charles Eames toy, a life size construction, and a behavourist's apparatus. Interpretation on any of these levels with their attendant ideologies was open to the spectator on a construe it yourself basis. Whatever the response, 'An Exhibit' made a stimulating and visually exciting oasis in the art gallery summer lull, and should provide exhibition designers, and even architects, with one or two profitable leads.

CoID

Designs in the kitchen

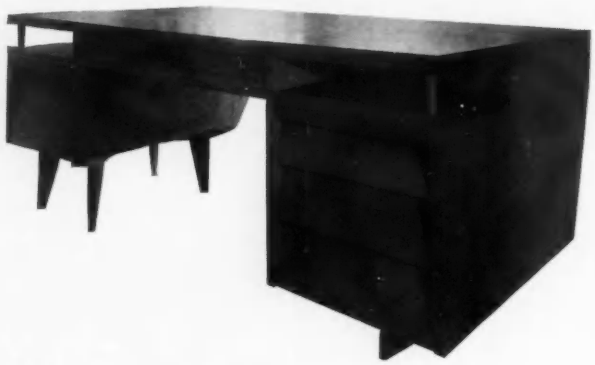
DESIGN readers who enjoyed the recent survey of kitchen trends (DESIGN August pages 43–51), will be interested to note that the CoID is organising a display of kitchens and kitchen equipment to be held in The Design Centre in the spring of next year. The display will consist of two fully furnished kitchens and two

continued on page 73

BOARDROOM FURNITURE TO MEASURE

is a practical possibility and need not cost the earth. For Executives who have special problems; the desk top must be large enough for plans or drawings, suitable for people to sit round in conference, or accommodate a special reference or filing system. All these and many other problems have been solved by HAMMERS.*

* The Brothers Nicholson have designed attractive reasonably priced Office Furniture exclusively for HAMMERS.



Office desk was part of the furniture designed by Holland & Hannen & Cubitts Ltd. for The Cement Marketing Board Offices.

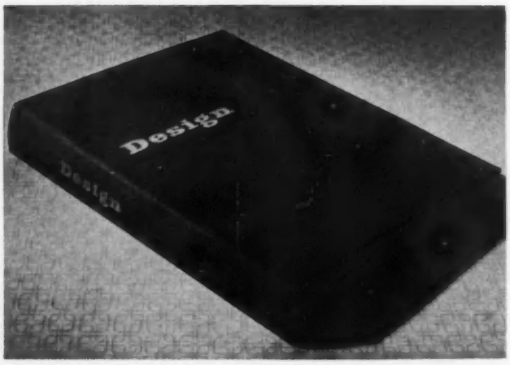
Geo. M. Hammer & Co. Ltd.

'You can trust Hammer's personal service'

Specialists in Library, Office and Laboratory Furniture.

Crown Works, Hermitage Road, Harringay, London N.4 STAmford Hill 6691-2

Craftsmen in woodwork since 1858



BINDERS FOR **Design**

are now available to take the new enlarged size of magazine, and are attractively bound in green linen, DESIGN gold blocked on front and spine and lined with black inside the covers

Two metal strips slide through the wire stitches. Each binder will hold 12 copies of DESIGN of any issue from April 1954.

BINDERS FOR DESIGN cost 12s 6d each, or 13s 6d post free from the Business Manager, DESIGN, 28 Haymarket, London SW1.

kitchen corners, one including a dining area, and the others planned for laundry work. The designers of the exhibition will seek advice from the Council of Scientific and Economic Management in the Home, so that the display meets real requirements and is functional, as well as attractive in appearance. It is expected that a number of retailers throughout the country will organise similar displays which link up with The Design Centre show, and BBC Television has agreed to feature it in a women's programme.

Colour about the house

On September 27 the CoID Scottish Committee opened the second exhibition to be held at its new premises at West George Street, Glasgow. The exhibition, 'Colour about the house', is open until November 23.

Design congress report

The CoID has published a report on the second international design congress held during September last year. The report entitled The Management of Design is available from The Design Centre, 28 Haymarket, SW1, price 3s 6d, or 4s post paid

New offices in Birmingham

The directors' suite on the top floor of the new office premises in Birmingham designed by Jackson & Edmonds for the Phosphor Bronze Co Ltd. The illustration shows the lounge and the dining room beyond, which can be separated by a sliding door. The furniture is supplied by Russell Furnishings Ltd.

LETTERS *to the Editor*

Half the picture?

SIR: Having read the article on motor car body design, 'Compromise in car bodies' (DESIGN July pages 38–41), one is prompted to ask the author if he is aware that a motor car moves, or whether it is to be judged solely from its immobile position in the showroom window.

To read such an article and find not one reference to the functional aspect of a motor car body makes one wonder how serious a magazine yours is. Wind resistance and wind noises when travelling at speed are all important questions. When criticising fascia panels, how much more valid that critisism is when the functional aspect is taken into account. The design of the Austin boot is called "untidy"; perhaps through looking "untidy" it holds twice as much luggage, perhaps the contrary. The swept back windshield pillars of the Vauxhall 'Victor' give very much better visibility, the most important function of the windshield. Headlamp cowls have a function to perform, apart from being a helpful bit of body design.

It is no good giving half the picture; no one is going to be stirred into serious thought by such an article unless design of an object is related to its function.

J. P. D. BRADDELL
Wayside Inns Ltd
Cotswold Gateway Hotel,
Burford, Oxon.

We invited the author of the article in question, E. G. M. Wilkes to reply to Mr Braddell's criticisms; Mr Wilkes writes:

"Mr Braddell is, of course, perfectly correct in demanding that a design criticism should take into account the practical and functional aspects. However, the article in question was not intended as a detailed analysis of various design features, interesting though that would have been. It would have required an extensive road test of each car and far more magazine space than could be spared.

"The article could only generalise, and the covering comment that I made, and with which I believe most people will agree, was to the effect that the performance, cost, size, and finish (ie the functional and practical aspects) achieved the objective of good all-round value very satisfactorily. The fault with three of the cars reviewed is a general lack of visual unity, and the purpose of the article was to suggest that this might be corrected either by a change of policy (that aimed at satisfying a particular demand with real efficiency, instead of attempting to satisfy everyone in a mediocre way), or by a better understanding of the purely visual element of design. In the latter connection I cannot see any excuse for the untidiness, the panel distortions, the lack of unity, the use of old fashioned motifs, and the poor copying of styling fashions such as were indicated in the article. I do not believe that there are any worth-while practical or functional considerations that can excuse this type of fault. It is almost certainly the result of indecision, or compromise, or incompetence, although I would hasten to add that the stylist is seldom to blame."

Axe, axed

SIR: It was interesting to read the study of the general-purpose axe in 'Design Analysis 4' (DESIGN August pages 20–5). Though they raise aesthetic and commercial objections, the authors do not consider that the unusual form of the joint between metal stem and wood handle affects the efficiency of the axe. One of the factors in the efficiency of the tool, however, is its length of life, and that may partly depend on the form of the joint. The photographs published do not show the shape of the stem after it has entered the wood handle. Does it avoid a sudden change of section and sharp corners where the part inside the handle joins the large part which is outside the handle and visible in the photographs? If not, the stress conditions will make the joint particularly vulnerable to repeated shock loading. This is, of course, exactly the type of loading that occurs in normal use. Cold weather would probably accentuate the liability to fracture, though more details about the properties of the steel used would be needed to estimate how severe the effect of cold would be.

The effect of a sudden change of section in the stem could be admirably demonstrated by a photo-elastic model of the kind described in earlier articles in the series. The model would also show the good mechanical effect of the sweeping curves, avoiding sharp corners, already provided where the stem joins the head of the axe.

S. E. MITCHELL
Mechanics and Materials Division
Mechanical Engineering Research Laboratory
Glasgow

SIR: The article on the general-purpose axe 'Design Analysis 4' seems to us to have overlooked the possibilities of modern adhesives.

To a structural engineer a tool which has a tang end forced into a piece of wood is an abomination. This applies both to the axe described and to the common household knife; the only justification for the tang is where the tool has a limited life as in a file.

A far better way both aesthetically and structually is to give the tool a flat end and to glue it into a longitudinal slit in a wooden handle.

Incidentally, knife makers still seem to cement their tangs into handles with a material that does not stand really hot water. There is no excuse for this.

N. A. DE BRUYNE
Managing Director
Aero Research Ltd
Duxford
Cambridge

Design for calculating machines

SIR: I should like to record my appreciation of the illuminating article by J. Christopher Jones on 'Anonymity and Repetition' (DESIGN February 1957 pages 37–41). Mr Jones combines with technical knowledge and aesthetic awareness, an unusual capacity for lucid exposition. I feel sure that many of your readers would welcome further articles in which the whole subject of calculating machines and electronic control is explored in greater detail.

NORBERT DUTTON
26 Beecroft Road, SE4

BOOKS

What automation does to human beings, *George Soule, Sidgwick and Jackson,* 15s

It is hard to believe that the author had this title in mind when he wrote the text. The significant thing about automation is that it *ceases* to do things to human beings – that it marks the end of all the inhumanities that we associate with industrial life. Mr Soule, who shows his liberal and humanistic sympathies on every page, knows this, and gives many examples of such a change or trend. It is good to see him expose the fallacy of a perpetually expanding economy by the sensible method of asking where it will lead. In his reaction against endless material progress he predicts the eventual establishment of a static society in which

continued on page 75

A MAGISTRATE'S CHAIR in conjunction with furniture executed specially by Ian Henderson for New Law Courts, Slough. In walnut, with foam rubber seat and back, covered in leather.

Architects and interior designers are invited to have their furnishing schemes executed by Ian Henderson Ltd. Special fitments and furniture, panelling (period or modern) besides curtains and floor coverings, etc. The Textile and Carpet selection is outstanding.

Ian Henderson Ltd

184 SLOANE STREET · LONDON S.W.1 (200 yards from Knightsbridge on the left) · Telephone: BELgravia 3271

for those who use pencils seriously

The following pencils are formulated especially for artists, architects and draughtsmen.

ROYAL SOVEREIGN *SUPERFINE DRAWING*	9H — 6B & F
FERROPRINT *LIGHT STOPPING*	9H — 2B & F
CARBON DRAWING *HIGH QUALITY DENSE BLACK*	2H — 3B
CRAYONETTE *TOUGH THIN COLOURED*	25 Colours

There is no better helpmate to good thinking than a good pencil, so give yourself the benefit of the very finest that money can buy—ROYAL SOVEREIGN.

BRITISH MADE

THE ROYAL SOVEREIGN PENCIL CO. LTD · LONDON · N.W.10

RS3Pd

BOOKS

our moral and social distinctions between work and leisure will be replaced by a far less troublesome distinction between paid and unpaid time. He feels, as many of us do, that unpaid time will be used in vital and not time-filling ways. But he is unable to give any idea of the changes in motive or belief that could adequately explain or give rise to such a change of habits. It is a pity that Mr Soule shows so little awareness of Lewis Mumford's 'Technics and Civilisation' in which this subject was so much more thoroughly and profoundly discussed so long ago.

J. CHRISTOPHER JONES

Designing a book jacket, *Peter Curl, The Studio Ltd, £1 5s*

'Designing a book jacket' is an extremely useful and informative book for any student of graphic design.

The book is, in fact, composed of illustrations of a hundred or so jackets, many of which are aesthetically pleasing, together with a great deal of sound advice on the many aspects of a graphic designer's job, from technical know-how to professional practice. The one regret I have is that nowhere has the author attempted to explain satisfactorily how far the visual impact of the jacket has been responsible for the success or failure of the book in terms of net sales. Peter Curl admits that often he is not even sure that the jacket illustrated as a good example "properly reflects the subject of the book". He mentions a selling factor but does not seriously attempt to define it. As far as he is concerned it is an intangible something that has to be integrated with "taste in design and idea and with the expression of the spirit of the book". To imply that this factor is outside the province of the designer "since . . . . . the publisher who knows his job will take it into account when choosing the designer for a particular commission", is simply burying one's head in the sand of artistic aloofness. It would have been extremely helpful and enlightening to have had an authoritative opinion, preferably supported with market research figures, as to the relative values of, for example, the favourable review, the evocative title, the well known author and the aesthetically pleasing jacket as selling factors.

It would also have been of use to the student seeking his first commission to have had a list of publishers' names and addresses together with a short description of the types of book each tends to publish.

RAYMOND HAWKEY

Small commercial buildings, *Richard W. Snibbe, Reinhold Progressive Architecture Library, USA, Chapman & Hall Ltd, £5 8s*

The field covered by this 'Photographic Record of 100 selected designs' is wider than the title suggests. The contents lists the following types of building: nurseries, farm buildings, flower shops, theatres, bars, recreation, factories, offices, restaurants, railroad stations, airline offices, service stations, hotels, apartments, shops, showrooms, banks, clinics, mortuaries.

A very large field to cover in a 215 page volume, and one cannot expect a thorough analysis of so many individual projects. The publisher's note states that the book is "primarily directed to the layman as a guide; critical comments have been made for the express purpose of educating the layman to 'see' – that is to look around". This purpose the book fulfils admirably. The photographs are very attractive, mostly covering a whole page. The author in his comments confines himself to the purely aesthetic aspect of each building, assuming presumably that the layman would not be interested in the conditions governing the design, or the technical details of execution. Small thumbnail sketch plans of each building accompany the photographs.

The buildings selected by the author are mainly from the United States but a few British and Continental examples are also illustrated. Most of them will be familiar to architects and designers, having been published previously in architectural magazines. It is useful, however, as Pietro Belluschi says in the foreword, to have them grouped in one volume, where they can be readily consulted when the need arises.

BRONEK KATZ

The modular number pattern, *Ezra Ehrenkrantz, Alec Tiranti Ltd, £1 15s*

The revival of capital investment following the end of the war has led to an increasing study of the methods and products of the building industry. The growing tendency for materials to be prefabricated in the factory has made it apparent that the lack of co-ordination of their dimensions is wasteful both of manpower and the materials themselves. Almost without exception standard products have to be cut to waste before being fitted into the structure.

Ezra Ehrenkrantz, an American Fulbright Fellow in architecture, has just spent two years at the Building Research Station, Watford, making an exhaustive study of this problem of dimensional co-ordination. His book reviews briefly the previous approaches to the problem, including those of Bemis and Le Corbusier, which he finds unsatisfactory in their general application. He goes on to postulate his own solution in the form of a three dimensional number pattern. The book includes three appendices showing its application to buildings and components.

Architects, and those in the building industry who are interested in solving the present-day problems of productivity and costs, will find much that is worthy of study in this book. Whether its solution offers a sufficient degree of flexibility to permit the proper planning and detailing of complex modern buildings can only be proved by its practical application.

G. F. HORSFALL

Stationery for a photographer

Part of a new range of stationery designed for Gordon McLeish and Associates Ltd, a new firm of photographers, by Alec Davis of Spearhead Services. The display typeface used is Stephenson Blake's Consort, reversed white on red-brown.

DESIGN advertising

Now that the circulation of DESIGN is over 11,000 copies per issue and the size of the magazine itself is increasing rapidly, the business section has been strengthened by the appointment of William N. Roberts who will work on advertising activities in collaboration with DESIGN's business manager, Arthur Sudbery. Mr Roberts has had many years of experience in advertising and was formerly with Amalgamated Press.

MANUFACTURERS *in this issue*

Ace Radio Ltd, Tower Works, Tower Road, NW10
A. Arden & Co Ltd, 7 Witcher Place, NW1
Barking Brassware Co Ltd, River Road, Barking, Essex
Birmingham Railway Carriage & Wagon Co Ltd, Smethwick 40, Staffs
Bristol Aircraft Company Ltd, Filton, Bristol
British Industrial Plastics Ltd, Tat Bank Road, Oldbury, Birmingham
Byron Business Machines, 9 Kingsway, WC2
Frank W. Clifford Ltd, Tudor Works, Dorset Place, SW1
Cravens Ltd, Darnall, Sheffield 9, Yorks
Davis Fabrication Co, 35 Longmead Road, SW17
De Havilland Aircraft Co Ltd, Hatfield, Herts
Thomas De La Rue & Co Ltd, 84 Regent Street, W1
Duple Motor Bodies Ltd, The Hyde, Edgware Road, NW9
Ekco Plastics Ltd, Southend-on-Sea, Essex
English Electric Co Ltd, 28 Kingsway, WC2
G. W. Evans Ltd, 225 Old Ford Road, Bow, E3
Ferodo Ltd, 10 Handel Street, WC1
Ford Motors Ltd, Dagenham, Essex
Halex Division, British Xylonite Co Ltd, Highams Park, E4
Harris & Sheldon (Electrical) Ltd, Stafford St, Birmingham
S. Hille & Co Ltd, 39 Albemarle Street, W1
HMV Household Appliances Division, Hayes, Middlesex
E. Illingsworth & Co (Bradford) Ltd, Bradford
Alfred Imhof Ltd, 112 New Oxford Street, WC1
Izons & Co Ltd, Iron Founders, West Bromwich
Kelsall & Kemps Ltd, Rochdale, Lancs
Lane & Girvan Ltd, Bonnybridge, Scotland
Langford & Hill Ltd, 9 Warwick Street, W1
R. Ling & Son, 80 Woodstock Street, E16
Marconi Ltd, 336 Strand, WC2
Metal Box Co Ltd, The Langham, Portland Place, W1
Metropolitan-Vickers Electrical Co Ltd, Trafford Park, Manchester
Micramatic Electrical Instrument Co Ltd, Meico Works, Congleton, Cheshire
Monsanto Chemicals Ltd, Monsanto House, Victoria St, SW1
Morphy-Richards Ltd, St Mary Cray, Orpington, Kent
Parker-Knoll Ltd, The Courtyard, High Wycombe, Bucks
Pifco Ltd, 36 Upper Thames Street, EC4
Phosphor Bronze Co Ltd, Birmingham
R. H. & S. L. Plant Ltd, 15 Rathbone Place, W1
Plyglass Ltd, Sandhurst Close, South Croydon
The Prestige Group Ltd, 14 Holborn, EC1
Pyrex Ltd, 81 Cromwell Road, SW7
Smith & Wellstood Ltd, 63 Conduit Street, W1
Thorn Electrical Industries Ltd, 105 Judd Street, WC1
United Glass Bottle Manufacturing Ltd, 8 Leicester St, WC2
Western Manufacturing (Reading) Ltd, The Aerodrome, Reading
T. S. Ware (Wildhern) Ltd, Andover, Hants
Josiah Wedgwood & Sons Ltd, Barlaston, Stoke-on-Trent

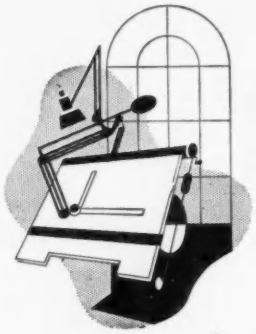
DESIGNERS *in this issue*

Ronald Armstrong; Misha Black, OBE, RDI, FSIA; Sir Alfred Bossom, FRIBA, MP, JP; R. Brockman; Sir Hugh Casson, FRIBA, MA, RDI; Hulme Chadwick, ARCA, ARAES, FSIA; Eric Clements, DESRCA, MSIA; George Collett, MSIA; Edward Curtis, DIPLARCH, ARIBA; Trevor Dannatt, DIPLARCH, ARIBA; Alec Davis; Robin Day, ARCA, FSIA; William Dixon; Eric Doudney, FRBS, MSIA; Frank E. Dudas; Farmer & Dark, F/FRIBA; E. F. H. Foster; Kenneth Garland, art editor (cover); Alexander Gibson, FRIBA; Milner Gray, RDI, FSIA, AGI; Richard Hamilton; Ronald Ingles, FSIA; Jackson & Edmonds; Vilhelm Koren, DESRCA; Philip Lucey, ARIBA; Clive Latimer, MSIA; Edward A. Ling; Eric Marshall, MSIA; Charles Munro; Victor Pasmore; Professor R. D. Russell, RDI, FSIA; Ernest Race, RDI; John Reid, ARIBA, MSIA; Sylvia Reid, ARIBA, MSIA; M. O. Rowlands, MSIA; Cecil Stephenson; Richard Stevens, BSC, MSIA; Victor Taylor, MSIA; A. H. Williamson, ARCA; Dennis Young, ARCA, MSIA.
Addresses of designers may be obtained from the Editor.

PRINCIPAL E. E. PULLÉE A.R.C.A, F.S.A.E

CITY OF LEICESTER EDUCATION COMMITTEE

Leicester College of Art



BOOKS FOR THE DESIGNER

Let SMITH'S supply you with the books that you need to keep abreast with the latest developments in commercial art, industrial design, and the work of contemporary artists and craftsmen.

Volumes not in stock can be obtained for you, and we shall be pleased to supply a list of standard works on any subject.

● *You can also obtain your business and personal stationery through our local branch.*

W. H. SMITH & SON

HEAD OFFICE: STRAND HOUSE
LONDON, W.C.2

BRANCHES THROUGHOUT ENGLAND AND WALES

HOPE'S
DOOR FURNITURE

FOR INDIVIDUAL CHOICE

List No. 204

HENRY HOPE & SONS LTD
SMETHWICK, BIRMINGHAM
17 BERNERS ST., LONDON, W.1

Famous for Metal Windows of Quality since 1818

Design reprint service

Quotations for reprints of articles and features in DESIGN *may be obtained from the Business Manager,* DESIGN, 28 *Haymarket, London* SW1. *Orders should be placed not later than the end of the month of issue.*

MODERN STEEL DESKS

at Low Cost

'THANET'

DOUBLE PEDESTAL AND SINGLE PEDESTAL DESKS

Features include:—

Clean, modern design.

Lino-covered top with anodised aluminium retaining bead.

Alternative arrangements of drawers (3 Box drawers or 1 Box drawer and 1 Filing drawer in either pedestal of Double Pedestal Desk; 3 Box drawers or 1 Box drawer and 1 Filing drawer in Single Pedestal Desk, with pedestal on right or left).

Box drawers run on nylon glides and fitted with rubber stops.

Filing drawers on fully ball-bearing progressive suspension arms.

Recessed plinths below pedestals to provide toe-space.

Suspended Filing Chassis in Filing drawers if desired (either cross-filing foolscap-width or full depth quarto-width).

Stationery Inserts for Box drawers if required.

High-grade finish, stove enamelled over phosphate coating.

Standard Colour, Scarborough Grey with Black lino top. Other colours to order.

EXPORT: The construction of these desks enables them to be completely knocked-down for shipment.

Please ask for Catalogue No. DN 800.

Harvey

G. A. HARVEY & CO (LONDON) LTD. Woolwich Rd., London, S.E.7. GREenwich 3232 (22 lines)

The B.B.C. Riverside restaurant, Hammersmith. Furniture in natural mahogany with 'Guardsman' red Rydura covered upholstery.

Designed and furnished in co-operation with the Corporation architect by BERESFORD AND HICKS of London, E.C.2.

Enquiries for schemes are welcomed

LASCELLES

for

LINE

and

HALF-TONE

also –
2, 3 and 4
COLOUR
BLOCKS

•

GRAVURE –
cylinder and
flat plate

•

ELECTROS
and STEREOS

•

Artists and
Designers

Phone – Temple Bar 8765-6

GWYNNE HOUSE, 15-17, ESSEX STREET, STRAND, LONDON, W.C.2

the Heron chair and foot stool

RACE furniture London

write for free illustrated catalogue of our full range

22 Union Road Clapham SW4: Telephone Macaulay 2215/7

CAN'T YOU GET IT ANYWHERE?

For white Ash or rosy Yew, scented Cedar or smell-less Sycamore, straight Oak, curly Walnut, bendable Acacia, dependable Lime or any other English wood – try

TURNERS of LEWES

the people who love
their wood and their work

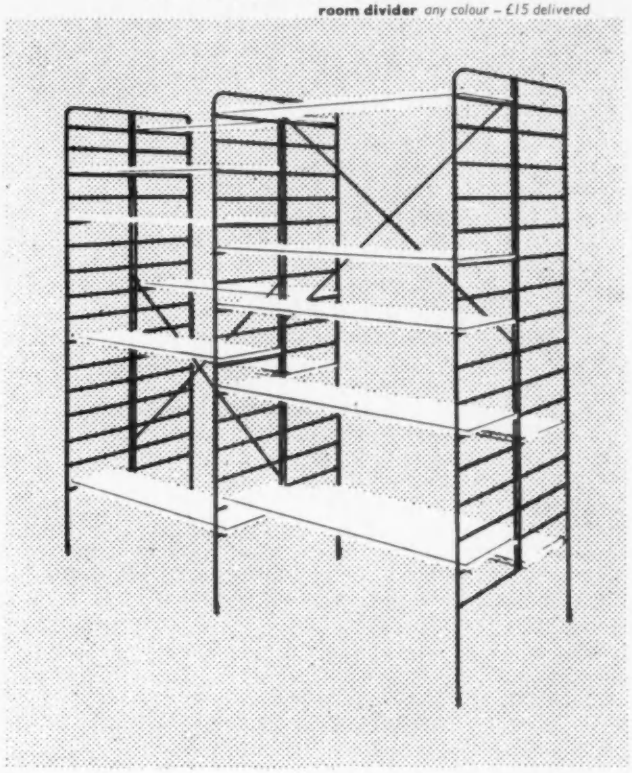
TURNERS of LEWES

Albert Turner & Son Limited
35 High Street, Lewes, Sussex
Telephone: Lewes 520 & 521

design
print
display

WALKERS
(showcards) limited
MANCHESTER 1. CEN. 4965/6/7
LONDON OFFICE HYDE PARK 2329

component furniture *by designers for designers*
catalogues from Scott Smith Limited
Victoria Road Deal Kent-tel 121
room divider *any colour – £15 delivered*



Classified advertisements

Rates: 9d per word (minimum, 15s). Box numbers, 1s extra

Copy: Last date for copy is 10th of month preceding date of issue

RECORD OF DESIGNERS

MANUFACTURERS *requiring the services of designers, whether for staff positions or in a consultant capacity, are invited to apply to the Record of Designers, CoID, London, or to the CoID, Scottish Committee, 46 West George Street, Glasgow C2. They can obtain a short list of designers suitable to their particular purposes, which should be explained in some detail. This service is free to British manufacturers and incurs no obligation.*

SITUATIONS VACANT

PACKAGE AND DISPLAY DESIGNER. If you can produce highly finished package designs and are an all-round display man, there is interesting work awaiting you in a well-known manufacturer's Studio. Excellent working conditions. 5 day week. Canteens. Applications, giving details of experience and salary to Box 259, DESIGN, 28 Haymarket, London SW1.

CONRAN FURNITURE require retail store representative 25/30. Salary according to qualifications. Car provided. Write in the first instance to: 6 Cadogan Lane, London SW1.

MARLER HALEY STUDIOS LIMITED have a vacancy for a designer with experience of three dimensional advertising material, point of sale units, exhibition stands, etc. We can offer a variety of interesting work under pleasant conditions. We also require first class lettering/layout artist. Telephone or write to 1 North Road, Caledonian Road (Caledonian Road Station, Piccadilly Line), London N7. NORth 6611/2.

DESIGNER-ARTIST required to work in a new section set up for the preparation of security document designs. The post would suit a man interested in the design of items combining functional value with artistic merit. Experience in security printing is not essential as training will be given but some knowledge of printing or engraving would be an asset.
The post is permanent and pensionable. The initial remuneration, dependent on age and qualifications, will be not less than £1,000 p.a. Housing Loan facilities available after an initial period of service. Apply, giving details of experience and qualifications, and stating age, to the Staff Manager, Bank of England Printing Works, Langston Road, Loughton, Essex.

READING EDUCATION COMMITTEE
ASHMEAD SECONDARY SCHOOL (800 boys), Northumberland Avenue, Reading. (Headmaster: G. A. Winterton, B.A.) Applications invited from Qualified Teachers of Art and Craft for a part-time post up to 4 days per week, from the end of September, 1957. The Teacher appointed will be required to assist with Art throughout the school and will have the opportunity to take some G.C.E. work. Application forms, which should be returned as soon as possible, obtainable from the Chief Education Officer, Education Office, Blagrave Street, Reading.
P. S. Taylor, Chief Education Officer.

LONDON COUNTY COUNCIL
BARRETT STREET TECHNICAL COLLEGE
As soon as possible, full-time teacher of Design to work with full and part-time students of Dress and Hairdressing. Burnham F.E. salary scale £610 to £1,025 plus London allowance and additions for qualifications and training, if applicable; increments within the salary scale for experience. Application

continued on page 80

CLASSIFIED *advertisements*

continued from page 79

forms from Secretary at College, Barrett Street, W1 to be returned by 16th October, 1957. (1709)

DESIGNER/DRAUGHTSMAN required by manufacturers of Contemporary Breakfast Room and Kitchen Furniture. Commercial experience and creative ability are both necessary. Apply by letter to Kandya Limited, Silverdale Road, Hayes, Middlesex.

DESIGNER required. Experienced in contemporary Packaging, Display and Exhibition Stand design as Chief Assistant to Design Consultants. J. EDWARD SANDER ASSOCIATES, 68 Oxford Street, London W1. MUSeum 2261/2.

INDUSTRIAL DESIGNER requires assistant. Wide scope including product design, interiors and exhibition stands. Experience in engineering and furniture design welcome. First class draughtsmanship essential. State salary. Write Box 253, DESIGN, 28 Haymarket, London SW1.

SITUATIONS WANTED

GRAPHIC DESIGNER, MSTD, LSIA. Specialist in Packaging, Publicity Design, Typography, desires full or part-time post as Consultant Designer, preferably in Scotland. Box 261, DESIGN, 28 Haymarket, London SW1.

COMMISSIONS & DESIGNS WANTED

PACKAGE DESIGN: modern, practical approach. Also stationery, trade marks, leaflets. Joy Funnell, LSIA, ATD, 12 Bloomfield Road, London N6.

FREE LANCE INDUSTRIAL DESIGNER offers services for product design in engineering and plastics. Original design, re-design, models, prototypes, working drawings. Box 181, DESIGN, 28 Haymarket, London SW1.

INTENDING EXHIBITORS at Overseas Fairs should contact DAVIES TURNER & CO LTD for free guidance. Specialists in packing and shipping Exhibits and Stands. Phone SLOane 3455 or write to 4 Lower Belgrave Street, London SW1, quoting Ref USX 680.

RALPH SALTIEL, furniture maker, invites your enquiries for cabinet making, joinery and high class interior fitments. Individual items and short runs our speciality. HAMpstead 9427.

DESIGNERS AND MANUFACTURERS of Exhibition Stands, Display Units and Flashing Units. Comprehensive service and personal attention of principals to YOUR Sales problem. Address your enquiry to Design Dept, KINRO PRODUCTS LTD, 55 Laburnum Road, Humberstone Garden City, Leicester.

FRAMING

PICTURE FRAMES available in all sizes. Special design and finishes made to order. Mounts cut in a fine range of new colours. The Rowley Gallery, 87 Campden Street, off Kensington Church Street, W8. PARK 4349.

PRINTING

THE CARAVEL PRESS offers a practical design and printing service to all who appreciate original ideas and first-class production. 11 Moxon Street, London W1. HUNTER 0492.

KINGS NORTON PRESS (1947) LTD, Colour Printers, have the most modern equipment to produce first class printed material coupled with a design service of outstanding merit. Factory – Kings Norton, Birmingham 30. Telephone: KINGS Norton 2262. London Office – Blackfriars House, New Bridge Street, London EC4. Telephone: CITY 6289.

A COMPLETE PRINTING SERVICE with a Studio for modern design; a Studio for Industrial Photography, including the new American Colour process, coupled with a fully automatic Printing Plant is the unique service offered by Nutt & Stevens Ltd, 3 Nedham Street, Leicester. A personal service by the Directors of the Company to all enquiries.

PERFECTION IN PRINT. If you require display work which requires extra care in production, faithful reproduction of an expensive design, or first class work which you will be proud to display, whether it is screen printing, letterpress or litho you can trust it to TRAPINEX LIMITED, 176–188 ACRE LANE, BRIXTON, SW2. COUNTER AND WINDOW DISPLAYS AND ALL FORMS OF WINDOW PUBLICITY.

PHOTOGRAPHY

Type repro. problems? PHOTO TYPESETTING could supply the answer: Display and special lettering, set direct to film or bromide, has many advantages – investigation and trial of its many applications is well worth while. PHOTO SET LTD, 9 Emerson Street, London SE1. Telephone: WATerloo 6630.

JOHN BAKER welcomes your enquiries concerning creative photography at our studio or on location. Telephone PADdington 2119. 8 Norfolk Mews, London W2.

MISCELLANEOUS

METAL – WIRE – TUBULAR WORK. Let us manufacture your prototypes and/or production runs. Holborn Metal Works, 334 Upper Street, N1. CAN 8042.

STAINED GLASS ARTISTS have for disposal Grafton Stained Glass Kiln SGC1; 10 trays; Pyrometer. 230V/AC/3P. Practically unused. £175. Box 260, DESIGN, 28 Haymarket, London SW1.

PROTOTYPES & MODEL MAKING

RICHARD DENDY & ASSOCIATES welcome your enquiri for architectural, engineering, experimental and sh models; production runs of advertising units rubber, plastics, wood or metal; prototypes in materials; giant exhibition and carnival displays; cl modelling; commercial lettering; designs and dra ings; film special effects and models; film and theatri properties, masks, wigs and costume trimmin 4, 5 and 6 Seaton Place, Hampstead Road, Lond NW1. EUSTON 7617 and 1981.

ADVERTISERS *in this issue*

Arlington Plastics Development Ltd .. ..
Atlas Lighting Ltd .. ..
Balding & Mansell Ltd .. ..
Beresford & Hicks .. ..
British Aluminium Co Ltd, The .. cover
British Geon Ltd .. ..
BIP Chemicals Ltd .. ..
Claude-General Neon Lights Ltd .. ..
Cintique Chair Co .. ..
De La Rue, Thomas & Co Ltd .. cove
Donald Bros .. .. cover
English Electric Co Ltd, The .. .. ..
Expanded Metal Co Ltd, The .. .. ..
Falk, Stadelmann & Co Ltd .. .. ..
Fibreglass Ltd .. ..
General Electric Co Ltd, The .. .. ..
Hammer, Geo. M. & Co Ltd .. .. ..
Harland, M. & Son Ltd .. ..
Harvey, G. A. & Co (London) Ltd .. ..
Henderson, Ian Ltd .. ..
Hille of London Ltd .. ..
H. K. Furniture .. ..
Hope, Henry & Sons Ltd .. .. ..
Imperial Chemical Industries Ltd .. ..
Lascelles & Co Ltd .. ..
Leicester College of Art .. ..
Line, John & Sons Ltd .. ..
London Transport .. ..
Mather & Crowther Ltd .. .. ..
National Cash Register Co Ltd, The .. ..
Orient Line .. ..
Race, Ernest, Ltd .. ..
Royal Sovereign Pencil Co Ltd, The .. ..
Scott Smith Ltd .. ..
Shanks & Co Ltd.. .. ..
Smith, W. H. & Son .. ..
Stockwell/Tibor/Gimson & Slater .. ..
Turner, Albert & Son Ltd .. .. ..
Walkers (Showcards) Ltd .. .. ..
Wall Paper Manufacturers Ltd, The .. ..
Wedgwood, Josiah & Son Ltd .. .. ..
Wrighton, F. & Sons Ltd .. .. ..

DESIGN is published for the Council of Industrial Design, The Design Centre, 28 Haymarket, London SW1 (Scottish Committee: at 46 West George Street, Glasgow C2)
Her Majesty's Stationery Office K108 SO Code No. 88-1266-10-57* Printed in Great Britain by *Balding & Mansell*, London and Wisb

AKING
e your enquiries
mental and ship
rtising units in
rototypes in all
al displays; clay
igns and draw-
lm and theatrical
me trimmings.
l Road, London

.. .. 10
.. .. 7
.. .. 19
.. .. 77
.. cover IV
.. .. 8
.. .. 18
.. .. 13
.. .. 66
.. cover II
.. cover III
.. .. 3
.. .. 14
.. .. 9
.. .. 83
.. .. 15
.. .. 73
.. .. 26
.. .. 77
.. .. 74
.. .. 16
.. .. 72
.. .. 76
.. .. 22
.. .. 78
.. .. 76
.. .. 70
.. .. 16
.. .. 1
.. .. 6
.. .. 68
.. .. 79
.. .. 74
.. .. 75
.. .. 4
.. .. 5
.. .. 71
.. .. 75
.. .. 17
.. .. 67
.. .. 2

t, Glasgow C2)
ondon and Wisbe